ENGINEERING NEWS-RECORD

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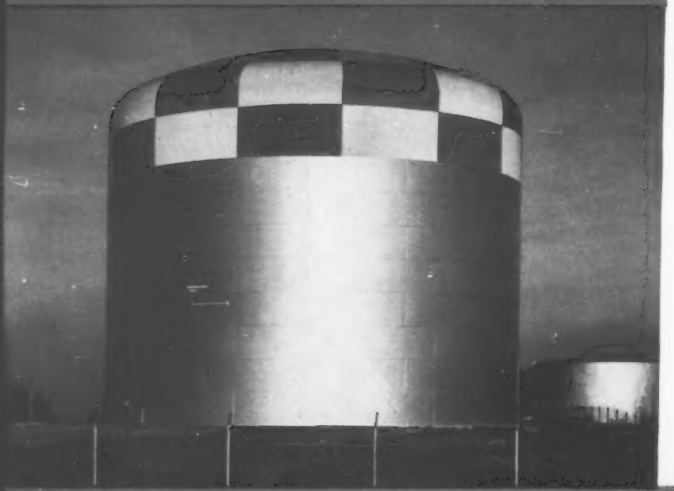
Taxiway becomes a concrete laboratory p.32

A McGRAW-HILL PUBLICATION

LANSING MICH 13

Reservoir, 4,000,000 gallons. Dia. 120', ht. 48'. Bangor, Maine.

Reservoir, 7,268,000 gallons. Dia. 116', ht. 95'. Mifflin Township, Pa.



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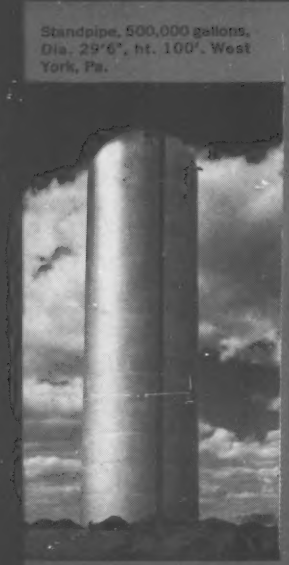
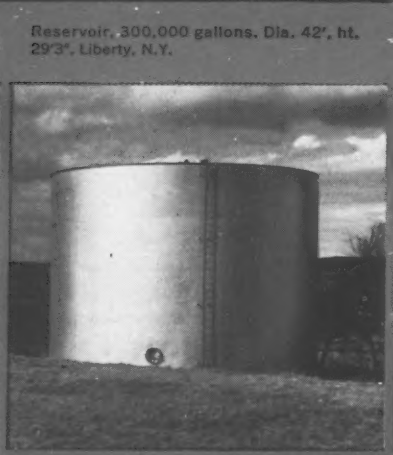
Standpipe, 500,000 gallons. Dia. 29'6", ht. 100'. West York, Pa.



Reservoir, 300,000 gallons. Dia. 42', ht. 29'3". Liberty, N.Y.



Reservoir, 2,220,000 gallons. Dia. 80', ht. 51'. Midland, Texas.

Standpipe, 225,000 gallons. Dia. 22', ht. 80'. County, Va.

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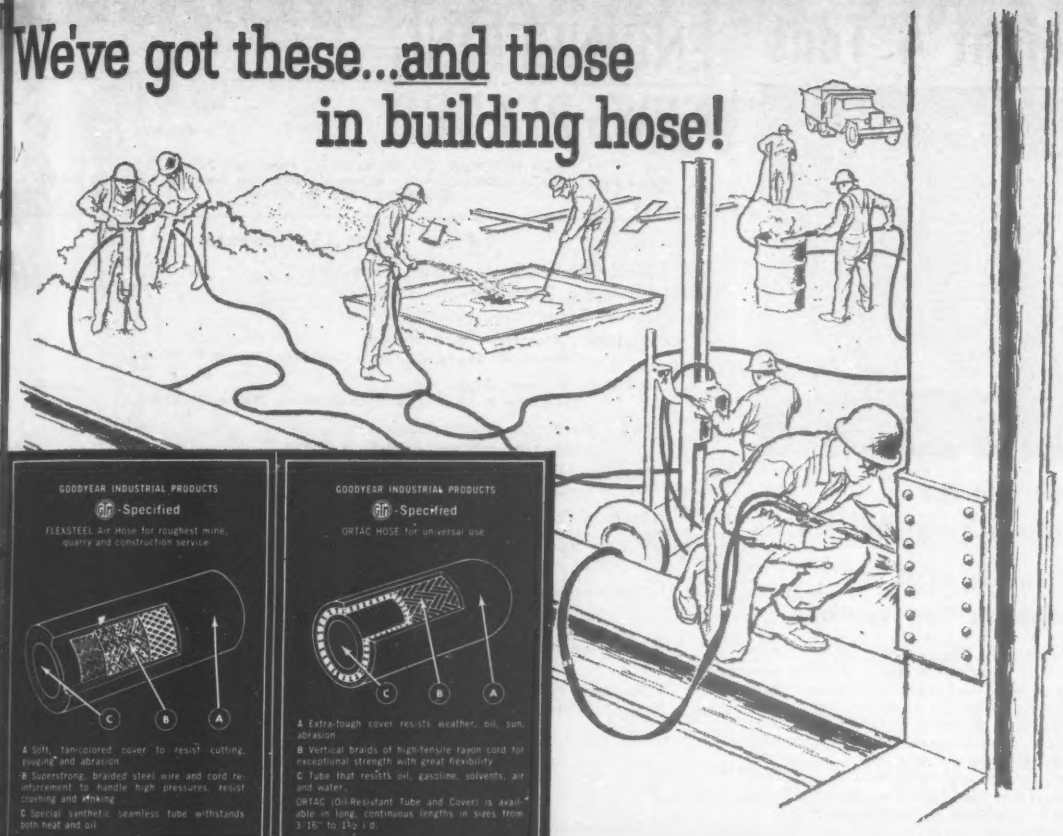

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A Soft, tan-colored cover to resist cutting, gouging and abrasion

B Superstrong, braided steel wire and cord reinforcement to handle high pressures, resist crushing and kinking

C Special synthetic seamless tube withstands both heat and oil

GOODYEAR INDUSTRIAL PRODUCTS

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ORTAC HOSE for universal use

A Extra-tough cover resists weather, oil, sun, abrasion

B Vertical braids of high-tensile rayon cord for exceptional strength with great flexibility

C Tube that resists oil, gasoline, solvents, air and water

ORTAC (Oil-Resistant Tube and Cover) is available in long, continuous lengths in sizes from 3/16" to 1½" i.d.

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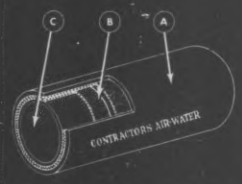
Contractor's Air-Water Hose for Construction Work



A Rugged cover that's both abrasion- and sun-resisting—continuously print-branded for easy identification

B Extra-tough braids of high-tensile rayon cord to handle pressures, resist crushing or kinking

C Special, nonporous tube resists alkali or slightly acid water

GOODYEAR INDUSTRIAL PRODUCTS

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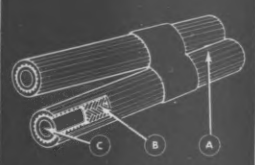
SPIRAFLEX Welding Hose for oxyacetylene welding, cutting, chipping



A Corrugated cover for firm grip and long wear—one line red, the other green for hook-up identification

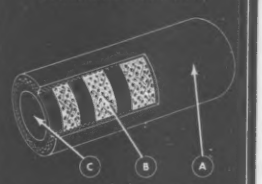
B Superstrong rayon braid reinforcement

C Nonporous, nonblooming, nonflaking tube

GOODYEAR INDUSTRIAL PRODUCTS

GY-Specified

FLEXSTEEL Steam Hose for high pressures and temperatures in severe service



A Extra-tough cover resists heat, aging and abrasion

B High-tensile braided steel wire reinforcements for maximum strength with flexibility

C Extremely heat-resistant tube

HIGH pressure or low—for air, water, steam, oil or gas—the smart choice in hose is Goodyear.

For Goodyear hose is built for builders: Its cover is super-tough to resist rough handling. It's heavily muscled with high-tensile cord or steel reinforcements. It resists kinking or crushing. Yet it's flexible and easy to maneuver.

Wouldn't it pay you, then, to insist on Goodyear quality on your next hose-using job? Check with your Goodyear Distributor for details on the special line that's designed to meet every contracting need. Or write Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."

the big name in hose is

GOODYEAR

Flexsteel, Ortac, Spiraflex—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

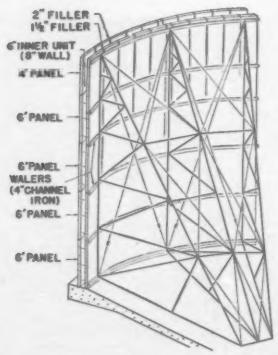
THE GREATEST NAME IN RUBBER

Weight 4 Tons

New Use for Symons Steel-Ply Forms

28′ Circular Walls Ganged for Sewage Plant

Friebel & Hartman, Shelby, Ohio contractor, with the use of a crane was able to strip and reset 2,300 square feet of forms on inside gang section in 3½ hours. And 8 men in less than 8 hours erected 2,300 square feet of forms and scaffolding on outside plus pouring the concrete. The project was the Mansfield, Ohio Sewage Treatment Plant, which consisted of four digestors.



Four ganged sections were used—each 22 feet wide and 28 feet high. This allowed pouring ⅓ of a tank at a time, and a pour every four working days. Weight of each ganged form was about four tons. A ¾ yard Lorain with an 80′ boom handled the sections.

Complete story on the Ohio Sewage Treatment Plant will be sent FREE upon request. Symons Forms may be rented with purchase option.

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WALKING 95,000 lbs. OF STEEL

INTO PLACE!

It's the big problems that really test a crane and a 95,000 lb. steel beam is a big problem.

The job was a Chesapeake and Ohio R.R. overpass at Muskegon Heights, Mich. The contractor was L.W. Lamb Co., of Holland, Michigan, who has been building an outstanding name for himself in western Michigan by solving big problems.

Four of these big beams went into the bridge. The crux of the problem lay in the fact that the loaded flat cars had to be spotted several hundred feet from the bridge piers. How to get the steel in place? It turned out to be easy! The two Northwest Model 6 Cranes simply picked up the beams, walked them to location and set them in place.

Your Northwest is always ready to go! We hear it everywhere, and Northwest users will tell you so. Jobs like this call for the best in equipment. Handling and traveling big steel requires stamina, smooth and accurate control, dependable power, visability, and sure-footed crawler design. Northwest Cranes bring you all of this. In addition, every crane feature you require is either standard equipment or available.

Before buying a crane find out what Northwest Cranes have for you. You will find it interesting.

NORTHWEST ENGINEERING COMPANY
1502 Field Bldg., 135 South La Salle Street, Chicago 3, Illinois

Two Model 6 Northwests set 95,000 lb. beams in place on an overpass.

C-6-12-LC

Two Northwest Model 6s easily walk the big beams into place.

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3/4 to 3 Cu. Yd. Capacity

NORTHWEST

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changes the ground rules for ¾-yd. truck-cranes

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MORE HC-78A ZEPHYRCRANE ADVANTAGES:

Exclusive SPEED-O-MATIC power hydraulic controls give you pin-point accuracy. Full-Function design is another exclusive feature. It offers independent, 2-directional power flow for each machine function. You can get independent power load lowering (reversing) clutches for either or both main drums; independent third operating drum; independent boom lowering clutch.

Find out how the new HC-78A handles heavier loads at extended radii . . . jibs 20-30-40 feet in length. See your distributor, or write LINK-BELT SPEEDER CORP., Cedar Rapids, Iowa.

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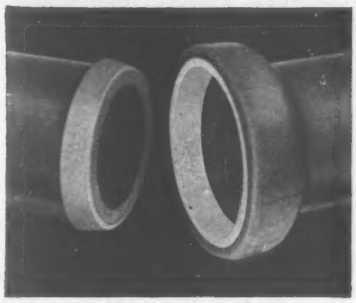
It's time to compare . . . with a Link-Belt Speeder

longer, stronger AMVIT Jointed Clay Pipe reduces maintenance FIVE WAYS

Factory-Made Mechanical Joint installed in over 100,000 miles of underground sewer systems



Slipshod, careless, and inferior construction methods only result in continuous maintenance, expense, and repair.

This is especially true in the construction of sanitary sewers.

The Amvit* Joint, made of plasticized resins of plyvinyl chloride, was designed to eliminate the human error that often occurred when old-fashioned jointing methods were used. Tight joints are a *must*, and can only be obtained by using the best materials and workmanship. Here's why over 100,000 miles of Amvit are now in use across the nation:—

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Roots may force the pipe out of line and clog the system. Amvit is a compression joint on the ball and socket principle. The surfaces of both bell and spigot are in constant compression. And, since it is a bottletight joint, roots *cannot* enter the line.

2. RESISTS CHEMICAL ATTACK

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3. RESISTS ACID ATTACK

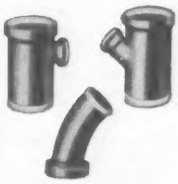
Grease and scum tend to build up inside the pipe. The resulting acid formation attacks and destroys certain synthetic substitute non-clay pipes. The design of the Amvit Joint assures that the pipe is self-centered at all times. This gives perfect alignment and self-cleansing action.

4. ELIMINATES EROSION AND DECOMPOSITION

Sand, gravel, and stones act as an abrasive and will scratch and roughen soft non-clay pipe. Because Amvit is a really tight joint, no foreign matter can possibly enter the line. And, like the pipe, Amvit Joint is unaffected by ordinary conditions of underground service.

5. COMPLETE FITTINGS

Amvit is furnished on all standard fittings as well as pipe 4″ through 24″ in diameter. This permits a uniformly tight line from house to treatment plant.



For more information on how Amvit can help cut your sewer project costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you, for this complete folder.

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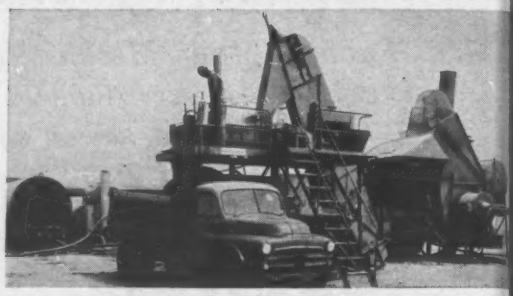

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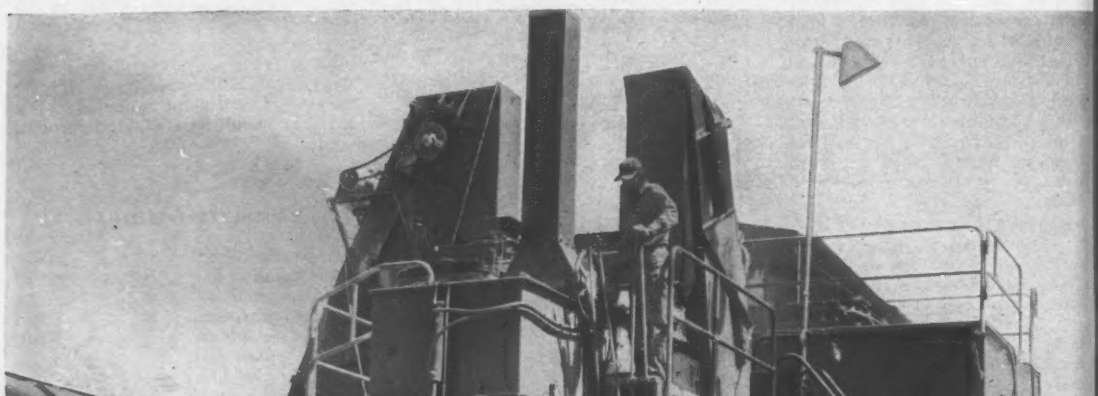

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Previous Pipeline Bridges

SIR—During the building of a pipeline, numerous topographical obstacles are encountered that necessitate the use of aerial crossings. A desirable economic feature in an overhead pipeline crossing is the use of the fluid or gas carrier pipe itself simultaneously as a main structural member of the bridge, as was accomplished in the Australian spans (ENR July 16, p. 28). The inherent superiority of pipe as a compression member makes such use quite possible in spans less than 300 ft in length. Such spans usually constitute the major portion of all bridge spans on a pipeline job.

Several years ago during the compiling of my undergraduate thesis on the design and construction of short-span pipeline bridges, I ran across a number of interesting designs that were somewhat akin to the Australian designs.

Scattered throughout our Pacific Coast region, there exists a series of self-supporting, all-welded, arch-type pipeline bridges that were fabricated by connecting the main line pipe on either side of the span with two mutually supporting smaller pipelines. The smaller pipelines were buttressed against each other and held in place by inverted Y pipe sections welded into headers.

The use of a King Truss pipeline bridge is common in the Oklahoma area. In these spans, the pipeline itself serves structurally as the upper chord or main compression member of the truss. The lower chord or main tension member consists of two cables, each of which (the truss being viewed in vertical cross-section) forms an extremity of the base of a triangle whose 90-deg apex is the pipeline and whose 45-deg sloping sides are equal.

Still another variation is a triangular Vierendeel truss type bridge appearing in the Southwest states. Here, the main line pipe is broken down into three smaller lines, two of which serve as lower chords and one of which serves as the upper chord of the truss. The sloping side verticals and the bottom laterals are made up of triangular assemblies that are placed at varying intervals along the truss to conform with moment requirements.

Germany's Rhine-Herne Canal is crossed by a 210-ft long, 24-in.-dia major gas transmission line span that is typical of many pipeline bridges found in the Ruhr Valley. A free standing pipe arch, the 24-in. main line is connected to two supporting pipes by conical connectors, spaced one meter apart. The cross-section is modified at the footings to combat maximum wind loads by moving the supporting pipes up alongside of the main pipe. To keep bending stresses at a minimum, a catenary shaped arch was chosen.

The Venezuelan government, in its natural gas system, employs a novel "M" type suspension-like support, wherein the pipeline is literally held up by its own boot straps.

In today's era, we find new pipelines criss-crossing our lands at ever-increasing rates. Practically any commodity that can be put into gaseous or fluid form can be handled by pipeline, provided it is not too viscous, abrasive, or corrosive. The recently constructed coal-carrying pipeline across northern Ohio will undoubtedly serve as a forerunner of a long list of pipelines that will transport solids, mostly by the slurry method. If such is the case, pipeline bridges will be more in vogue than ever before, and the need for an orderly exchange of construction experience and design ideas pertaining to pipeline spans will become ever greater.

WILLIAM F. KLOSTERMAN
Civil Engineer
City of Middletown
Middletown, Ohio

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

For Your Calendar . . .

Wood Industries Conference, Portland, Sept. 10-12. Write: Louis P. Growney, Arrangements Committee, c/o Pacific Power & Light Co., 404 Public Service Building, Portland 4, Ore.

Institute of Traffic Engineers, annual meeting, Commodore Hotel, New York City, Sept. 13-17. Write: Institute office, 2029 K St. N. W., Washington 6, D. C.

Malleable Founders Society, industry meeting, Hotel Sheraton-Cleveland, Cleveland, Ohio, Sept. 18. Write: Malleable Founders Society, 781 Union Commerce Building, Cleveland 14, Ohio.

Steel Founders' Society of America, fall meeting, The Homestead, Hot Springs, Va., Sept. 21-22. Write: Steel Founders' Society of America, 606 Terminal Tower, Cleveland 13, Ohio, attn. George K. Dreher, Market Development Director.

Conference on Planning and Design of Urban Helicopter Facilities, Institute of Aeronautical Sciences Building, 7660 Beverly Blvd., Los Angeles, Calif., Sept. 21-22. Write: Los Angeles Chamber of Commerce Aviation Dept., 404 S. Bixel St., Los Angeles 54, Calif.

International Council for Building Research Studies and Documentation, Rotterdam, Netherlands, Sept. 21-25. Write: The Secretariat of the CIB, c/o Bouwcentrum, P. O. Box 299, Rotterdam, The Netherlands.

Industrial Nuclear Technology Conference, Morrison Hotel, Chicago, Ill., Sept. 22-24. Write: L. Reiffel, Armour Research Foundation Technology Center, Chicago 16, Ill.

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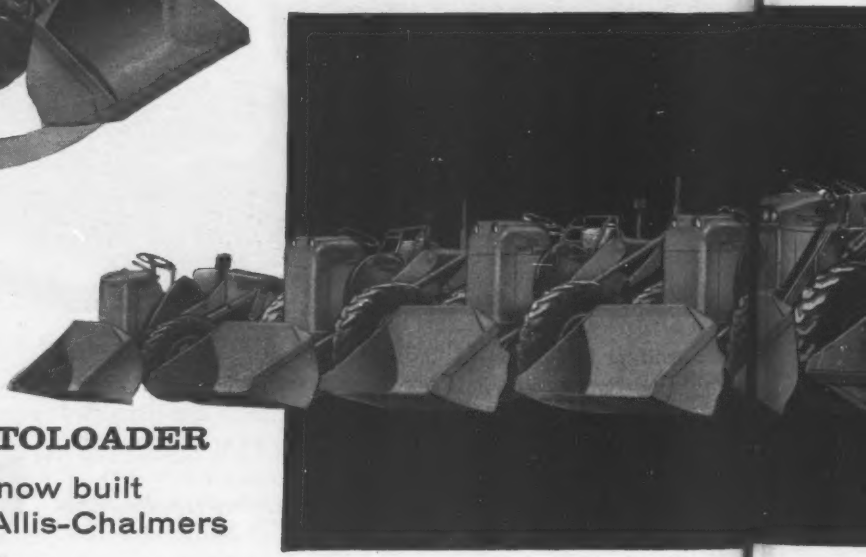

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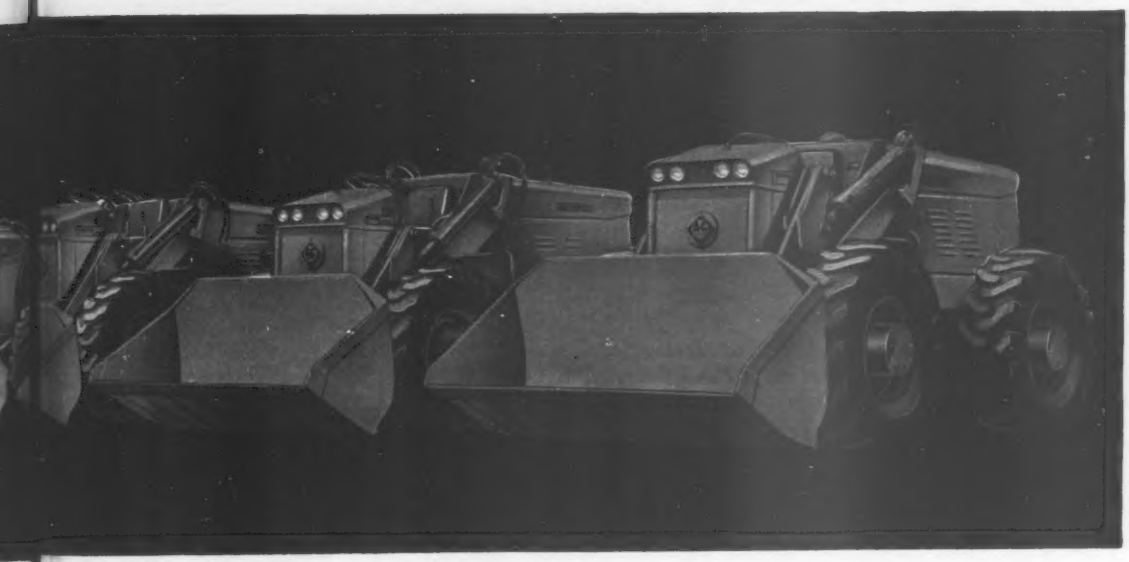

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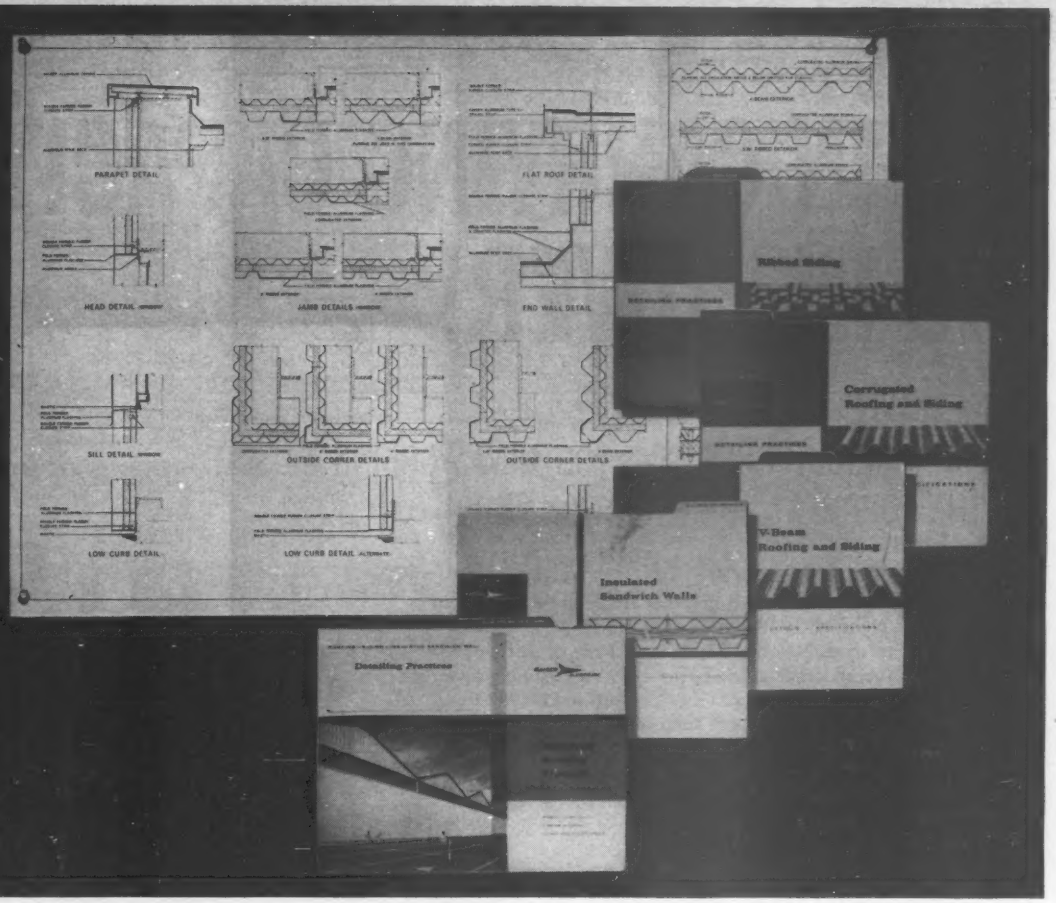

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Call your INTERNATIONAL Dealer now. Trucks with bodies, hoists, frame reinforcements, etc. will be shipped from INTERNATIONAL Truck Sales Processing Center 24 hrs. after they receive order!

Model Series	RF-192	BCF-182	B-184	B-182	B-164
Gross Vehicle Rating	43,000	33,000	24,000	21,000	19,000
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Wheelbase	157 in.	149 in.	141 in.	141 in.	129 in.
Engine	450 cu. in.	308 cu. in.	308 cu. in.	308 cu. in.	264 cu. in.
Transmission	5-speed Direct, 3-speed Auxiliary	5-speed Direct, 3-speed Auxiliary	5-speed Direct	5-speed Direct	4-speed Synchro-mesh
Rear Axle and Capacity	34,000 single-reduction tandem	28,000 single-reduction tandem	18,500 2-speed	16,000 2-speed	15,000 2-speed
Tires	9.00 x 20 10 ply	9.00 x 20 10 ply	10.00 x 20 12 ply	9.00 x 20 10 ply	8.25 x 20 10 ply
Frame Reinforcements	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"
Springs	Std.	Std.	Yes	Yes	Yes

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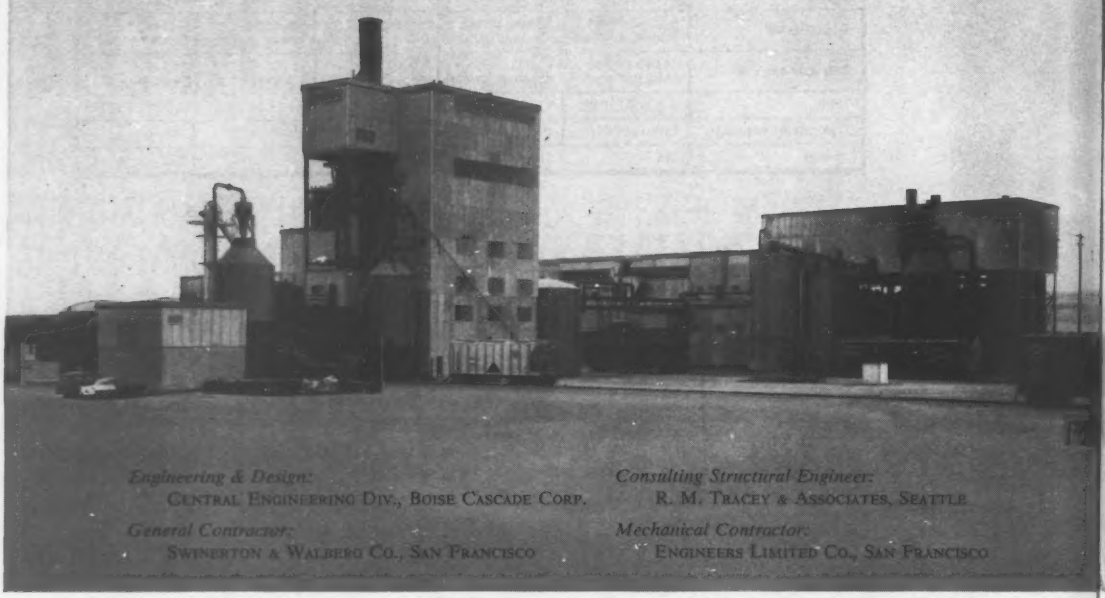

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chose JENKINS VALVES

on a proved record of stamina in severe duty

Few valve services are so rigorous as pulp and paper making. And few pulp and paper mills have been planned with so much know-how and care as the new Wallula, Washington mill of the Cascade Kraft Corporation, a subsidiary of Boise Cascade Corporation. *"Best of its kind"*, was the directive covering everything from the eight-story high boiler to the kraft paper making machine as long as a football field to the valves and other accessory equipment.

The corporation's engineers, from experience that includes many of the country's famous paper mills, chose JENKINS Valves to control the transfer of pulp liquors and stock, high pressure steam, water, air and for fire protection service. The choice was based on the proved reliability and economy of Jenkins Valves in severe duty.

Surely, valves with the stamina to stand such severe duty are a wise choice for ANY plant or building . . . especially since Jenkins Valves cost no more. Jenkins Bros., 100 Park Ave., New York 17.

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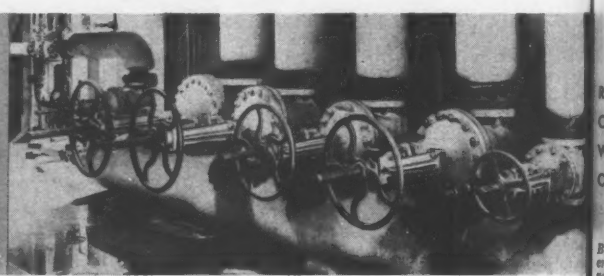

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ENGINEERING NEWS-RECORD

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CONTENTS

For Construction: $2.5 Billion..... 21
Rail Rapid Transit: Still in the Plans..... 24
Major Bills Are Almost Ready..... 23
Steel Closed on Mississippi River Bridge..... 27
Narrows Span Gets Formal Start..... 27
TVA Will Construct New Steam Plant..... 28
Fort Randall Tunnel Gets Research Job..... 28

FEATURES

Taxiway Becomes a Concrete Laboratory..... 32
Nylon Roof for a Summer Theater..... 38
Composite Design Cuts Steel 20%..... 44
Boosters Double Pipe Capacity..... 51

INTERNATIONAL

Kent Gets a Big Lift Bridge..... 57
Luxury Village for Communists..... 57
Brazil Selects a Capitol Design..... 58
Arched Truss Will Span Indus..... 58

RESEARCH AND DEVELOPMENT

Seeded Blanket Starts Grass Growing..... 63

NEW PRODUCTS

Pillow Tanks, Rubber Tire Tanker Carry Liquids. 69

MEN AND JOBS

Washbourne to Be Oklahoma Highway Chief.. 75
H. Miller Heads Seattle Sewage Project..... 75
Edward Stone Designs Beirut College..... 75

BUSINESS AND FINANCE

Equipment Firms Boost Sales..... 110
Homebuilders Seek Tax Changes..... 113
Four Cities Plan World's Fairs..... 114

LABOR

Congress Sharpens Basic Issues..... 117
Political Action Gets Boost..... 118
Strikes Don't Halt Wage Climb..... 118
ESA Moves to Exclude Nonprofessional Members 119

Reader Comment.... 7 Unit Prices 86
Calendar ..... 7 Materials Prices 88
Washington Observer 19 Construction Reports. 91
Obituaries ..... 83 Statistics, Indexes .. 108
Editorials 132

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

ROAD REBOUND COMING—Because many states put the brakes on their road programs pending Congressional action on Interstate financing, contractors booked only $22.4 million in new highway construction contracts last week. That's the lowest weekly volume since November, 1957. But you can expect awards to come back with a rush now that Congress is seriously working on a financing plan that will permit work to continue at a somewhat slower, but not crippling, pace (see p. 23).

PAVING RECORD—Michigan's Highway Department claims a new national paving record was set this month by Pierson Construction Co., Saginaw. The company placed 6,242 lineal ft of 24-ft-wide, 9-in.-thick concrete on U.S. 12—The Detroit-Chicago Expressway—in a 12-hour working day. The same company set the previous record last month when it placed 6,050 ft on U. S. 12, the department says.

SOLAR HEAT FOR FACTORY—Solar energy will heat and air condition a 160,000-sq-ft factory under construction in Sudbury, Mass., for Raytheon Manufacturing Co., manufacturer of electronic equipment.

U.S. HITS MISSOURI POLLUTERS—The federal government last week took its second enforcement action under the 1956 pollution-control act. Health, Education and Welfare Secretary Arthur S. Flemming ordered St. Joseph, Mo., and 18 meat-packing and other plants there to stop discharging untreated wastes into the Missouri River by June, 1963.

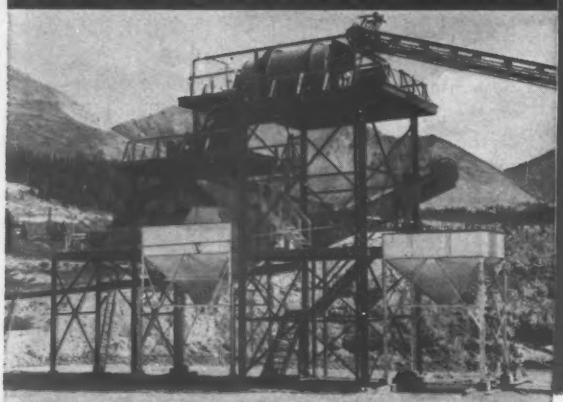
BIG ONE GETS BIGGER—National Homes Corp., the nation's top producer of prefabricated housing, is taking over seven other prefab firms. That will bring National's production up to 45,000 units this year—about one-third of estimated prefab home shipments this year and 3.5% of all single-family, nonfarm private housing starts.

NO ROADS NEEDED—Curtiss-Wright Corp. will produce its "Air Car," which needs no roads, travels on its own cushion of lightly compressed air. Production will start in November at a yet undetermined rate; cars will go to businesses, not to the public for awhile. The 300-hp craft goes 60 mph 6 to 12 in. off the ground—no wheels, no transmission, no roads.

NO DRIVER NEEDED—The Chicago Transit Authority has successfully completed first test to determine the feasibility of self-guiding buses. The proposed buses would operate in trains in exclusive lanes on expressways. Electronic equipment built into the expressways and the buses would guide them automatically. Possible advantages: speeds up to 70 mph; low construction cost; less noise than trains.

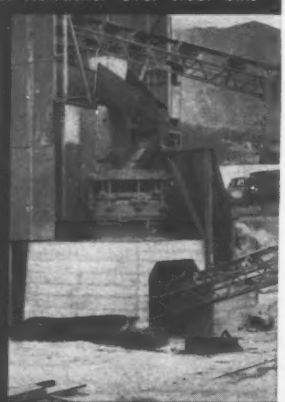
COLORADO Concrete Aggregate Plant

C. Ryan & Son aggregate plant near Climax, Colorado



Telsmith Super-Scrubber, Vibro-King Finishing Screen, and Sand Classifier, and Gravel Rewasher over steel bins

Feeder, Rotary Grizzly and 15x38 Jaw Crusher



Scalping Screen, and Gyrasphere Secondary Crusher

G-31

TELSMITH designed and equipped

The C. Ryan & Son aggregate plant, near Climax, Colorado, makes three sizes—minus 1½" plus 3/16", minus 3/16" plus ¼", and minus ¼" sand. This *complete Telsmith plant* has a capacity of 100 tons or more per hour and its products are used to make concrete aggregate for large industrial companies. Let Telsmith engineer your plant for big capacity, product flexibility, and low-cost efficient operation. Send for Bulletin 266.

TELSMITH EQUIPMENT IN THIS PLANT

30" x 5'6" Heavy Duty Plate Feeder • No. 450 Rotary Grizzly • 15 x 38 Roller Bearing Jaw Crusher • 3' x 10' Single Deck Vibro-King Scalper • 36-S Gyrasphere Secondary Crusher • 72" x 10' Super-Scrubber • 4' x 10' Double Deck Vibro-King Finishing Screen • 20" x 13' Twin Screw Rewasher • 24" x 19' Single Screw Sand Classifier • Three (3) Belt Conveyors.

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WASHINGTON OBSERVER

- **Interstate: Fallon trying for smaller cut**
- **Classrooms: 13 years to catch up with needs**
- **Cabinet group to handle radiation safety**
- **More sewage money coming?**
- **Reactor start scheduled**

● **Efforts are still being made to bring about less of a cut in the level of highway construction.** Rep. George H. Fallon (D., Md.) has introduced legislation that would set Interstate authorizations for fiscal 1961 at $2 billion, and leave 1962 authorizations at $2.2 billion.

The bill also carries the financing proposal adopted by the House Ways and Means Committee that is geared to raise $1.8 billion for roadbuilding in 1961 and $2 billion in 1962 (see p. 23).

Rep. Charles A. Buckley (D., N. Y.) is backing a similar bill. It seeks a "declaration of intent" from Congress to reimburse states for toll and free roads incorporated in the Interstate system.

● **The U. S. will be short at least 130,000 classrooms when the class of 1971 shows up for the first grade next month.** That's the "conservative" estimate of Health-Education-Welfare Secretary Arthur S. Flemming.

Last year the shortage was 140,000. At the present rate of construction it will take 13 years to eliminate the accumulated backlog of needs (ENR, June 25, p. 21).

Mr. Flemming believes there is still a chance for passage of the Administration's school construction bill, which would help local school districts service the debt on bond issues. He says he is still "working" with some key senators on it. But now most observers think the bill is dead.

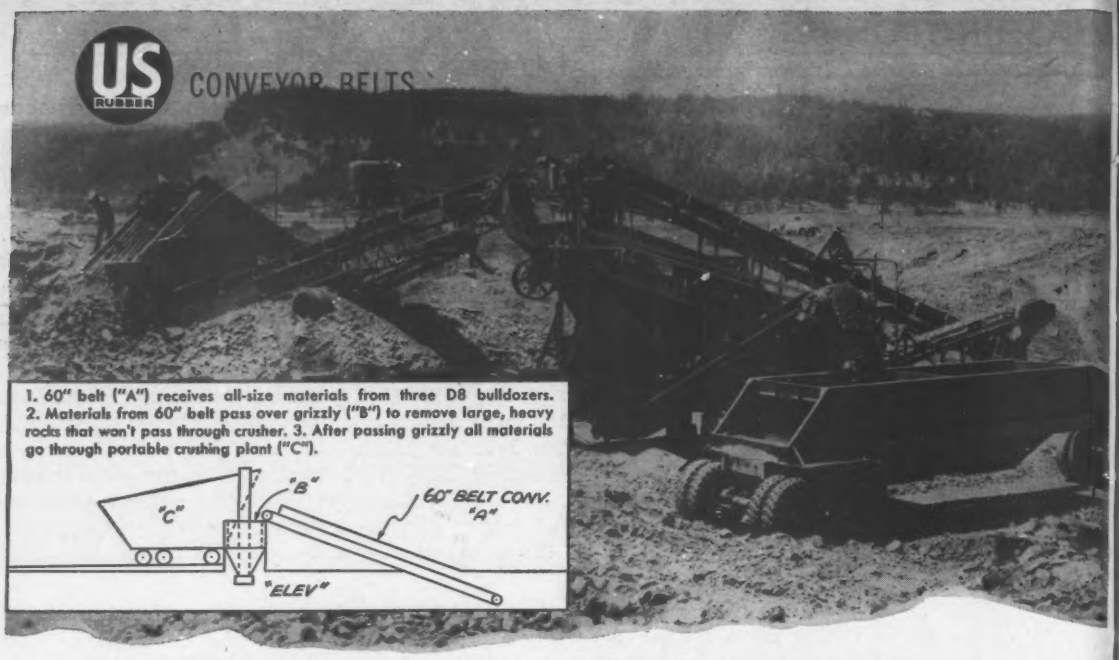
● **Responsibility for radiation safety will be lodged in a special Cabinet committee under the terms of a new White House proposal.** It means a shift in authority away from the Atomic Energy Commission to the Cabinet and the Public Health Service.

The Cabinet committee will set standards of maximum permissible exposure. AEC will apparently keep control over its present licensing and regulatory functions, but PHS will get authority over environmental radiation and a larger role in drawing up exposure standards.

● **Chances for an increase in funds for sewage treatment facilities in this session have gone up.** Majority Leader Lyndon Johnson includes water pollution control legislation as one of the five "must" pieces of legislation.

The Senate Commerce Committee has trimmed the generous House-approved bill, however, to levels less likely to meet a veto. The House doubled annual authorizations from $50 million to $100 million; the Senate committee cut to $60 million. The House doubled the limit-per-community to $500,000; the Senate group shaved it to $400,000.

● **The experimental nuclear reactor to supply heat for a seawater conversion plant in California will go under construction about April 1, 1960,** and be finished by January 1, 1962. The Fluor Corp. of California will get the contract to build, once Congress approves legislation now in a Senate-House conference.



1. 60" belt ("A") receives all-size materials from three D8 bulldozers. 2. Materials from 60" belt pass over grizzly ("B") to remove large, heavy rocks that won't pass through crusher. 3. After passing grizzly all materials go through portable crushing plant ("C").

Conveyor equipped with U.S. Matchless Belt increased production from 175 tons to 300 tons per hour

Such records as this have made U.S. Rubber the world's largest producer of conveyor belts.

In this instance the "U.S." Belt helped increase production at the Carlson-Lien Company (Piedmont, S.D.), a supply firm currently producing road-building crushed rock and delivering it to highway projects. The belt is 60" wide, 35 feet from center to center (78 feet overall). "Our intention," says Bruce Lien, company secretary-treasurer, "is to replace all belts with U. S. Rubber Belts."

In this operation, bulldozers push the rocks to be processed into the loading point. The conveyor belt then carries this material to the grizzly. The belt was designed to withstand direct loading by bulldozers. The impact of the large rocks falling directly on the belt does not damage the conveyor system. This permits the grizzly to be placed at the discharge end of the conveyor instead of at the feed point as in conventional installations.

The superiority of this belt not only helped speed up and increase production, but also eliminated the need for three or four men to laboriously remove large rocks that would damage a belt of inferior quality. The "U.S." Belt proved so efficient in tons moved per hour that another bulldozer was added to keep the loading pit stocked with raw materials. "The belt will pay for itself on this one job. We recommend it to anyone," says Bruce Lien.

• • •

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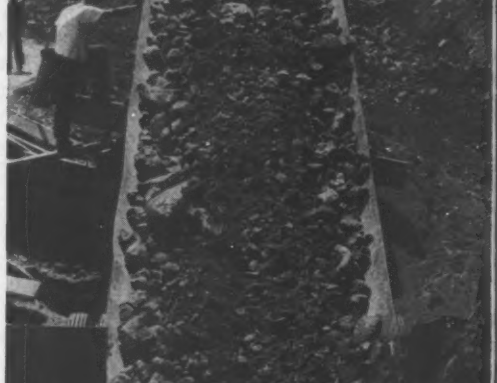

Close-up of 60" U. S. Matchless® Belt carrying rocks from raw material pit up incline to crusher.

This installation was handled by "U.S." Distributor W. S. Nott, Minneapolis

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For Construction: $2.5 Billion

- **But President may veto the $1.2-billion public works appropriation passed by Congress this week—too many new starts.**
- **Senate may put back some of the money the House slashed in working out a $1.285-billion military construction bill.**

The big money bills affecting construction are speeding to final enactment in Congress. The two major bills—appropriations for military construction and for public works—will be put to President Eisenhower soon.

Ready for the President's consideration this week was the public works bill, carrying funds for the Corps of Engineers, the Bureau of Reclamation, the Bonneville Power Administration, Tennessee Valley Authority and related activities.

A billion-dollar military construction appropriation was ready for further Congressional consideration in the Senate Appropriations Committee, and in the Senate itself.

Together, the measures provide some $2.5 billion for expenditure in the fiscal year that began July 1.

But the President is opposed to the approximately 75 new starts for construction in the public works bill. He may exercise a veto—and he has never lost one yet.

And the Senate may well decide that the House of Representatives cut too deeply into the military services construction funds. The 18% reduction probably will be restored somewhat.

The two big issues are simple:

- Congress wants new construction of power, irrigation and flood control projects. The President doesn't.
- The House of Representatives thinks there is too much money being spent for present-day antiaircraft missiles, whether the Army's Nike-Hercules or the Air Force's Bomarc. The Senate usually has its way in restoring money that House members—more acutely subject to pressure—have voted to cut.

The big question, then, as these measures clear for the White House, is whether the President will swallow the new starts in the public works bill. He has forced Congress to his will on the major housing legislation (see p. 23). And he has forced his will, with some compromise, on how to finance the big Interstate highway program (see p. 23).

Seldom does a President veto an appropriations bill; but just as seldom has a President had an unbroken string of winning veto battles with Congress.

Republicans are somewhat worried over the "veto" image that the President has created. Efforts will be made to convince him the public works bill is not too bad. Similar representations from Republicans convinced the President that he could, in good conscience, sign the bond financing legislation for the Tennessee Valley Authority.

1 Public Works

Both houses of Congress completed action this week on a compromise $1.2-billion appropriation for federal public works projects.

The compromise bill cuts back the Senate recommendation by $57 million, but is $23 million higher than the earlier proposal by the House of Representatives. It is also $23 million higher than the figure recommended by the Budget Bureau, with the added difference that the Budget Bureau did not call for any new starts.

In reaching a compromise between the Senate and House, the bill deletes construction starts for several major Senate-recommended projects: Yellowtail Dam, Mont., Green Peter Reservoir, Ore., Currecanti Project, Colo., and Melton Hill Dam in the Tennessee Valley Authority's area.

One of the most controversial features of the bill (HR-7509) is a $2.4-million appropriation to start construction of a 384,000-kw hydroelectric power plant at Trinity Dam, Calif. This project, to cost $60 million eventually, was the subject of a bitter fight between public and private power partisans. The Eisenhower Administration—strongly backed by the Interior Department—had long urged that Trinity's power facilities be built and operated under the "partnership" philosophy by Pacific Gas & Electric Co.

Almost 20% of the proposed public works appropriations would be earmarked for continuing construction of seven projects: $47.4 million for Glen Canyon Dam, Ariz.; $44.5 million for California's Central Valley Project (including the Trinity Power Plant); $43.5 million for Oahe Dam, S. D.; $32 million for Ice Harbor Dam, Wash.; $27 million for Great Lakes connecting channels; $26.4 million for Hartwell Reservoir, Ga. and S.C.; $23.7 million for lower Mississippi River channels and levees; $20 million for John Day Lock and Dam, Ore. and Wash.

A $500,000 appropriation to start construction of the controversial Burns Creek multipurpose dam in Idaho is conditioned on authorization of the project by the House. Odds are strong, however, that such authorization won't be forthcoming this year.

A $400,000 appropriation to study the Potomac River above Washington, D. C., was restricted by the Senate-House conferees to water supply and pollution control. Public power advocates are strongly pushing for a multipurpose dam on the river.

Another first-time appropriation calls

Utility Regrets Federal Rejection of Partnership

U. S. rejection of Pacific Gas & Electric Co.'s partnership proposal for construction of Trinity Dam power facilities drew a reaction of disappointment from the utility last week.

"This action is unfortunate for the taxpayers," declared Robert H. Gerdes, executive vice president. "The public treasuries now will be denied $320 million in taxes and net project revenues over the Trinity repayment period."

for $50,000 to start planning on the proposed $1-billion, 5-million-kw Rampart Dam across the Yukon River in Alaska. This proposed dam would be 400 feet high and would back up a reservoir covering 10,000 square miles—larger than either Lake Erie or Lake Ontario.

Other appropriations provide: $32 million for the Bonneville Power Administration ($22 million for construction); $15.3 million for TVA (no construction); $2 million for the Southwestern Power Administration ($880,000 for construction); and $735,000 for the Southeastern Power Administration (no construction).

2 Military Construction

New military construction money would be cut to $1.285 billion, $278 million less than the Defense Department requested, under a House-passed appropriation bill that the Senate will take up in the next few days.

The House approved the bill as reported by its Appropriations Committee, with 18% lopped off the $1.563-billion Defense request. Armed forces spokesmen made a strong plea for restoration of deleted items.

Some $60 million of the savings aren't open to question, however. This decrease came about when Defense Secretary Neil H. McElroy forced a revision of the Army-Air Force air defense plan, as demanded by Congress. The new plan, sharply revising needs for Nike-Hercules and Bomarc installations, could cut estimated outlays by some $1.4 billion over the next several years, the House committee said.

Construction for missiles gets a huge chunk of the money in the House bill for the current year, despite the Nike-Bomarc reduction. Army surface-to-air missiles were voted nearly $119 million and Air Force missile programs, $413 million—including $33.5 million for the early warning system.

Over-all, including facilities for reserve forces, the House cut the Army request by $99 million to an approved total of $273 million, trimmed the Navy construction figure by $64 million to $189 million, and slashed the Air Force by $138 million to $777 million of new construction cash.

Actual construction activity of the armed services, of course, isn't limited exclusively to newly appropriated funds. In addition to money that will come out of the new appropriation bill, the armed services on July 1 had $880 million of carryover funds available for new projects not yet awarded to contract at that time. To pay for these projects and for continuing work on other jobs previously awarded, the defense construction agencies held a gross carryover totaling $2.4 billion.

Where public works funds would go . . .

(Major items, add 000)

Corps of Engineers

Jackson Lock, Dam, Ala.	$ 8,000
Walter George Lock, Dam, Ala.	14,900
Painted Rock Reservoir, Ariz.	5,171
Greers Ferry Reservoir, Ark.	11,130
Los Angeles County Drainage, Calif.	15,500
Sacramento Ship Channel, Calif.	6,500
Terminus Reservoir, Calif.	5,500
Central Sou. Flood Control, Fla.	9,000
Hartwell Reservoir, Ga.-S. C.	26,400
Illinois Waterway, Ill.	7,670
Tuttle Creek Reservoir, Kan.	18,345
Barkley Dam, Ky.	19,000
Greenup Locks, Dam, Ky.	9,265
Lock, Dam 41, Ind.-Ky.	10,300
Markland Locks, Dam, Ind.-Ky.-Ohio	9,827
New Richmond Locks, Dam, Ky.-Ohio	9,300
Plaquemine-Morgan City Waterway, La.	5,951
Mississippi River Gulf Outlet	5,900
Great Lakes Connecting Channels	27,000
Fort Peck Dam, 2nd Power Plant, Mont.	8,250
Hopkinton-Everett Reservoirs, N. H.	5,568
Garrison Reservoir, N. D.	5,050
Dillon Reservoir, Ohio	5,160
New Cumberland Locks, Dam, Ohio-Pa.-W. Va.	6,800
Eufala Reservoir, Okla.	13,400

Bureau of Reclamation

Gila Project, Ariz.	3,449
Boulder Canyon Project, Ariz.	2,900
Central Valley Project, Calif.	44,565
Collbran Project, Colo.	4,500
Fort Peck Project, Mont.	2,902
Washita River Basin, Okla.	10,100
Crooked River, Ore.	2,833
Weber Basin Project, Utah	5,835
Columbia Basin Project, Wash.	8,000
Missouri River Project, Seven Units	32,688
Glen Canyon Dam, Ariz.	47,367
Navajo Dam, N. M.	9,945
Keystone Reservoir, Okla.	10,000
Oologah Reservoir, Okla.	12,500
Cougar Reservoir, Ore.	9,000
Hills Creek Reservoir, Ore.	8,300
John Day Lock, Dam, Ore.-Wash.	20,000
The Dalles Lock, Dam, Ore.-Wash.	7,000
Oahe Reservoir, S. D.	43,500
McGee Bend Dam, Tex.	5,800
Ice Harbor Lock, Dam, Wash.	32,000
Vicksburg Harbor, Miss.	9,500

Engineers' New Starts

Beaver Reservoir, Ark.	1,500
New Hogan Reservoir, Calif.	1,500
Redwood City Harbor, Calif.	1,378
Jacksonville-Miami Waterway, Fla.	1,130
Hunt-Lima Drainage Dist., Ill.	1,000
Red Rock Reservoir, Ia.	1,113
No. 2 Barren Reservoir, Ky.	1,000
Algiers Cut-off, La.	1,420
Westville Reservoir, Mass.	1,800
Pascagoula Harbor, Miss.	1,242
Buttermilk Channel, N. Y.	1,500
Ohio St. Bridge, Buffalo, N. Y.	2,000
Wilkesboro Reservoir, N. C.	1,000
Allegheny Reservoir, Pa.-N. Y.	1,400
Pound Reservoir, Va.	2,500
Summerville Reservoir, W. Va.	2,000
Flaming Gorge Dam, Utah	13,000

Reclamation New Starts

Colorado R. Levees, Ariz.	450
Burns Creek Dam, Ida.	500
Greater Wenatchee Div., Wash.	500
Cedar Bluff Unit, Kan.	400
East Bench Unit, Mont.	1,000
Smith Fork Project, Colo.	500
Hammond Project, N. M.	500
Seedskadee Project, Wyo.	1,354

Where military funds would go . . .

(Projects over $2.0 million, add 000)

Army

Redstone Arsenal, Ala.	5,292
Fort Greely, Alaska	3,322
Fort Huachaca, Ariz.	4,527
Fort Ord, Calif.	2,186
Fort Campbell, Ky.	2,360
Fort Knox, Ky.	2,191
Army Chemical Center, Md.	2,104
Cold Regions Lab., N. H.	3,000
West Point, N. Y.	6,772
Fort Sill, Okla.	4,515
Fort Bliss, Tex.	8,000

Navy

Marine Corps Air Sta., Ariz.	3,439
NHS, Lemoore, Calif.	21,554
Missile Test Center Pt. Mugu, Calif.	25,823
Training Center, San Diego, Calif.	4,343
NAAS, Whiting Field, Fla.	7,490
Naval Radio Station, Me.	3,179
Naval Shipyard, N. H.	3,497
Naval Station, R. I.	7,353
Armed Forces Staff College, Va.	4,000
Naval Radio Research Sta., W. Va.	3,957

Air Force

Tropo Scatter, Alaska	7,000
Norad, Colo.	10,000
Homestead AFB, Fla.	4,734
McCoy AFB, Fla.	6,949
Tyndall AFB, Fla.	3,677
Schilling AFB, Kan.	3,938
England AFB, La.	2,351
Andrews AFB, Md.	16,980
Seymour-Johnson AFB, N. C.	2,534
Minot AFB, N. D.	2,452
Wright-Patterson AFB, Ohio	9,227
Arnold Eng. Div. Center, Tenn.	5,690
Sewart AFB, Tenn.	2,249
Richard Bong AFBM, Wis.	16,000

Various Classified Locations

Ballistic Missiles	369,540
Air Control and Warning	91,503
Ballistic Missile Early Warning	33,456
Strategic Missiles	10,000

As Congress goes into the homestretch . . .

Major Bills Are Almost Ready

The Congressional tempo, increasing as the time of adjournment nears, brought these three major pieces of legislation close to the point of final decision this week:

1 Labor

Union leaders suffered a stunning defeat with House passage of a toughened-up labor reform bill. House action was a triumph for President Eisenhower. He had thrown his full weight behind the victorious Griffin-Landrum bill, and his efforts tipped the balance.

The House bill also was a victory for building contractors. It stopped cold, for the time being, a drive by the building trades union to overturn the Denver Building Trades court decision.

Two weaker reform measures introduced by Democrats had specifically exempted building trades from secondary boycott charges for picketing secondary employers at construction sites. The successful Landrum-Griffin measure knocked this section out.

The House Bill contains a provision of particular importance to the construction industry. It authorizes the National Labor Relations Board to certify a union as representing employees without first conducting an election. However, this is limited significantly only to those cases where there is a history of collective bargaining between labor and contractors. The Senate-approved Kennedy bill, on the other hand, contains a pre-hire labor contract, seven-day union shop and union referral clause.

Another provision, sought by both contractors and the building trades, was included to specifically legalize employer contributions to apprenticeship training funds.

Aside from provisions to clean up racketeering within unions, the House bill contains these important Taft-Hartley changes that strike hard at union power:

- Virtually all secondary boycotts are outlawed.
- Hot-cargo contracts with all employers—not just teamsters—were scrapped. Employers could not be barred from firing an employee for refusing to cross a picket line or to handle struck goods.
- The right of unions to picket to win new members is tightly limited.
- State agencies are given the right to try smaller disputes in the no-man's land area the National Labor Relations Board had refused to handle.

The House bill now goes to a conference committee with the Senate, which had approved the milder Kennedy-Ervin bill. All the enormous union pressure that had been brought to bear on the House will now be focused on the dozen or so conferees in an attempt to weaken the House bill.

This puts the Democrats on the spot, and no one more than Sen. John Kennedy (D., Mass.), whose Presidential ambitions may ride on the outcome. He will fight strongly to tone down the House measure.

2 Housing

A redrafted $1-billion housing bill that goes the farthest yet toward meeting the President's objections started on its way through Congress. The Senate Banking Committee okayed the latest version—a second revision of the bill that Mr. Eisenhower vetoed—within 24 hours after the Senate failed by nine votes to override.

Retained in the new bill are several provisions the President opposes, notably 37,000 units of added starts for public housing and two new loan programs of $50 million each for college classrooms and housing for the elderly. But the new version requires appropriations instead of direct Treasury advances for both these loan programs—a partial shift toward the President's position.

Loans for college housing—as distinct from the new classroom program—would get $250 million additional under the bill. Loans would continue to be made at low interest rates under the present formula, which Mr. Eisenhower wants to change. The current rate is 3⅛% for this fiscal year.

Urban renewal authority is increased by $650 million in the new version, with $100 million of it earmarked for use at the President's discretion to assist cities and towns of less than 100,000 population. This is the same redrafted provision that appeared in the first revision, passed over by the banking committee when it voted to try to override the veto.

Mortgage insurance authority for the Federal Housing Administration is in the Senate committee bill. But this authorization is tied to a rigid cutoff date of Oct 1, 1960. The 1960 deadline, prohibiting any new FHA mortgage insurance commitments or agreements after that date, would make another housing bill mandatory next year.

The Senate planned to pass the housing bill this week. House action was expected to follow promptly.

3 Highways

A new solution to the highway financing problem has been devised by the House Ways and Means Committee based on new taxes along with delayed earmarking of funds.

The latest proposal calls for increasing the federal tax on motor fuels by one cent a gallon—raising it from three to four cents—starting Sept. 1 and running through June 30, 1961. Then, starting June 30, 1961, half of the current 10% excise tax on new automobiles and half of the present 8% excise tax on parts and accessories would be earmarked for highway construction annually until June 30, 1964. None of these taxes currently goes for roadbuilding.

Outlook for approval by both Congress and the Administration is good.

Under this method of financing, Interstate apportionments to states for fiscal year 1961—to be made now—would be $1.8 billion. There would be $2 billion for fiscal 1962, to be made available next year. Present authorizations for these years are $2.5 billion and $2.2 billion respectively.

At the end of fiscal 1960, the Highway Trust Fund would show a $107-million deficit, but it would be solvent by the end of fiscal 1961. Starting in fiscal 1962, it would show a surplus of around $185 million.

The committee action is an out-and-out compromise between the Congressional no-tax-increase stand taken early this year, and the Administration's adamant objection to any tampering with the general revenue.

Previous attempts by the House Ways and Means Committee to increase the federal fuels tax met with sound defeats. Result: The committee approved a $1-billion deficit bond financing program along with similar delayed excise tax earmarkings. But this financing scheme would have meant a drastic slash in roadbuilding activity.

Apportionments would have been cut to only $600 million for fiscal 1961, and $1.4 million for 1962. Coupled with this plan was a four-year stretchout.

Rail Rapid Transit Keeps a Foothold

Rail rapid transit keeps a tenacious hold on the planners of mass transportation to and from the central city.

Man's obsession with his automobile and the continuing development of expressways are obviously making deep inroads on the planner's thinking, but he still looks over the possibilities of rail—wistfully sometimes, sometimes with excitement.

Metropolitan areas now recognize the urgency of over-all planning to meet transportation needs. Master schemes are in preparation; some are being implemented.

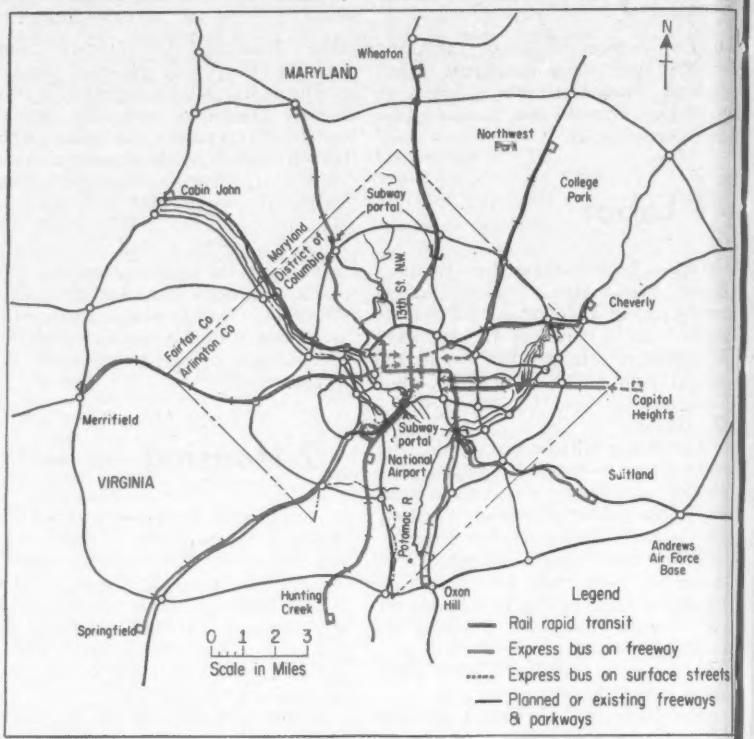
In the smaller or more loosely spaced cities, rail rapid transit is seldom, if ever, given any formal or official thought. Rubber transportation is firmly entrenched. Planning here seeks ways to utilize fully the rubber-tired vehicle. Rapid transit systems to supplement the automobile center on express buses. Special road lanes or bus turnouts on high-speed expressways are the tracks.

In the somewhat larger cities, rubber again appears to be edging out rail. Rail systems are hinted at or elaborated on in reports and plans. But in most of these areas, urban expressway systems are growing at such a fast pace, or the population density is so low, that the odds are against rail's making headway.

It is in the biggest or most closely knit cities that rail rapid transit gets the most serious thought. It is here that rail plans have the best chances of being carried out. Reason: Either the number of persons to be moved is so great that no other system will really do, or some rail rapid transit already exists.

Even in this last group, however, the roles of automobile and bus, parking lot and freeway, are strongly emphasized in master plans. They work either as supplements to the rail, as feeders or both.

Here is ENGINEERING NEWS-RECORD's survey of what cities in the U. S. and Canada are doing or thinking about rail rapid transit.



Washington, D. C.—33 miles of rail in a $2.5-billion plan

• **San Francisco**—The five-county San Francisco Bay Area Rapid Transit District's rail rapid transit plan is designed to supplement and augment the freeway systems of Contra Costa, Alameda, San Francisco, San Mateo and Marin.

First stage of the extensive plan involves 123 miles of rail route and would cost $716.5 million. It calls for 31 miles of surface route, 21 miles of underground track and 71 miles of elevated structure. This includes subway stretches in San Francisco and Oakland, and a 3.8-mile underwater crossing of the Bay to connect San Francisco and Oakland.

Second stage—to be constructed by 1970—would add another 42 miles to push the system further out into the suburbs. Cost: $113 million.

Other stages between 1970 and 1990 would expand the system still further by adding another 225 miles at a cost of $716 million.

Big parking lots at suburban stations are an integral part of the transit plan.

Principal work on the study was done by Parsons, Brinckerhoff, Hall & Macdonald. PBHM, Bechtel Corp. and Tudor Engineering Co. have been retained to complete detailed and specific studies from the plans. These are to be done by March, 1960. After various bodies okay the plan, voters will see it.

Capital costs for the system will have to come from public funds. The state has become a partner in the venture by conditionally committing state funds for the underwater crossing.

• **Chicago**—The Chicago Transit Authority's $315-million, 20-year transit extension and improvement program includes about 50 miles of new rail.

For Chicago and the 28 suburbs CTA serves, there are 163 miles of rail rapid transit. New work includes:

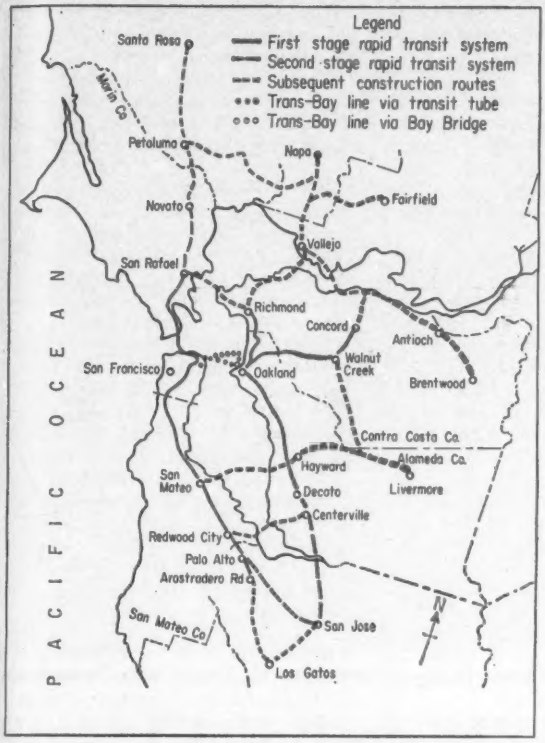
• **West Side Subway**—America's first rapid transit route designed and built as an integral part of an expressway. Trains run down the median strip of the eight-lane Congress Expressway. A 6½-mile section opened in 1958 connects with the Milwaukee-Dearborn-Congress subway and extends west. A three-mile section to be completed in 1960 runs farther west.

• **Northwest Rapid Transit**—An eight-mile rail line will connect with the Logan Square "L"-Subway and go northwest to the city limits. It will run along the median of the Northwest Expressway, on which construction recently started.

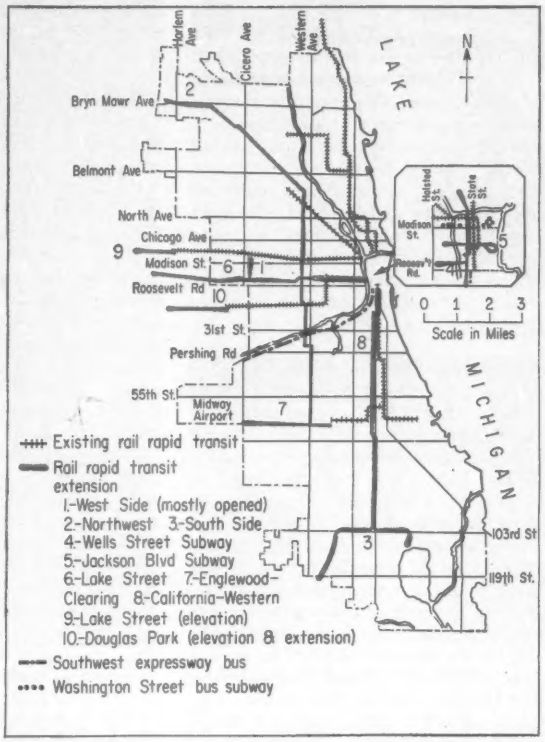
• **South Side Rapid Transit**—A rail facility in the median strip of the proposed South Expressway, it will go from 30th Street to 103rd Street on the Calumet Branch of the expressway, and to the city limits at 119th Street on the Blue Island Branch.

By Marc Leggiero with Leah Shanks. Associate Editor Leggiero studied and analyzed the mass transportation plans dug up by Researcher Shanks for this roundup of facts on where rail rapid transit stands.

n Master Plans of Major Cities



San Francisco—123 miles of rail in first stage



Chicago—trains running in expressway medians

• **Southwest Rapid Transit**—Lanes for the exclusive use of buses will be built in the median strip of the Southwest Expressway.

• **Wells Street Subway**—A new subway through the central business district will go from the elevated structure near Chicago Avenue southward in Wells Street to a connection with the transit route in the South Expressway.

• **Jackson Boulevard Subway**—An east-west subway in Jackson Boulevard, from the new West Side Subway near Halsted to a terminal loop in Grant Park.

• **Washington Subway**—A bus subway between Canal Street and Michigan Avenue.

• **Lake Street Routing**—A connection between the Lake Street Rapid Transit and the new West Side Subway, via the route of the Belt Railroad.

• **Englewood Clearing Extension**—Extension of Englewood rapid transit branch west from 63rd & Loomis into Clearing Industrial District at 63rd and Cicero.

• **California-Western Rapid Transit**—A rapid transit route in the proposed Cross-Town Expressway from a connection with the Northwest Expressway to a connection with the proposed Englewood branch extension.

The items above are estimated at a total cost of $182 million.

Another $96 million will be spent for modernization of existing rapid transit facilities. Biggest item here is for signal and train control systems. Other items include elevation of some street-level sections of track, additional track, easing sharp curves, grade separations and modernization of substations. Work has started on some.

The rest of the $315 million would go for rolling stock.

CTA plans to finance the plan principally from funds provided by other public agencies.

• **Washington, D. C.**—A $2.5-billion transportation plan for the National Capital Region was sent to Congress last month.

The scheme includes freeways, express buses and rail rapid transit. It calls for 33 miles of double track rail line on four routes radiating from downtown Washington, three going to the Washington Circumferential Highway, about 10 miles out. One half of the mileage will be in subway; the rest will be on median strip of freeways or on separate right-of-way.

The freeway system would consist of 329 miles of superhighway—some in existence, some already planned and others completely new.

Express buses will operate on eight routes totaling 66 miles one way. Six will radiate from downtown and extend to the Washington Circumferential Highway.

Cost breakdown is $1.8 billion for highways, $68 million for express buses; $458 million for rail; $37 million for parking at express transit stations; and $119 million for downtown parking.

The system is expected eventually to run at a deficit that will have to be made up.

Plan was sponsored by the Administration and the four-year study was under the direction of the National Capital Planning Commission and the Regional Planning Council.

Congressional action this year is unlikely.

• **Cleveland**—The Cleveland Transit System opened 13 miles of rail rapid transit in 1955. Route begins in East Cleveland, goes through the downtown

. . . Rail gets attention in mass-transportation plans for cities

area and extends west. Cost was $30 million. A two-mile extension to the west was added in 1958.

A 1.5-mile downtown loop, to cost $35 million, is now being considered.

A preliminary report has been made by the Regional Planning Commission for a proposed over-all transit plan.

Basic pattern of the rapid transit feature of the plan follows, for the most part, existing railroad lines radiating from the center of Cleveland. The rapid transit radials—totaling about 30 miles—would be built in a series of priorities.

The CTA is conducting preliminary studies on possible routes and extensions of the rail system.

• **New York City**—The interstate commuting problem between New Jersey and New York City is the most troublesome rail problem in this area:

There are nine commuting railroads in the New York area—and most of them are looking for help, either in the form of financial aid or permission to cut down commuter service.

One partial remedy to the movement problem is a proposal for a transit loop connecting the commuter railroad terminals in New Jersey with downtown and mid-Manhattan by one tube at the Battery and another under the Hudson river at 60th Street. This proposal by De Leuw, Cather & Co. is under consideration.

The New York City Transit Authority's program concentrates on extensive and expensive improvements to the city's existing 237 miles of subway and elevated routes.

The authority is also starting "park-and-ride" lots at outlying stations to induce more persons to use subways.

• **Boston**—Service recently started on the Highland section to bring the Metropolitan Transit Authority's rail rapid transit system up to 73.7 miles.

The MTA had taken 9.4 miles of abandoned Boston & Albany Railroad and converted it to rapid transit to make this new facility.

Future plans include a new downtown subway under Stuart Street, paralleling the Boylston Street Tube, which is operating at capacity. Project would cost $21 million.

The city is considering converting more old railroad into rapid transit.

• **Toronto**—After five years of successful experience with its first five miles of subway, the Toronto Transit Commission and the Metro Board are starting 10 more miles. Two miles will be an extension of the present subway, and eight miles will be at right angles to it.

There will be facilities for interchange with surface cars and bus routes that will act as feeder lines. Parking lots are also being considered at stations.

Long-range plans include further extension of rail rapid transit.

• **Philadelphia**—The intrastate commuting problem has been analyzed by the Philadelphia's Urban Traffic & Transportation Board.

Proposals include extensions of the Broad Street Subway to the northeast, to the northwest and to the south.

Other intrastate actions include agreements with the Pennsylvania and Reading railroads to add service and reduce fare on commuter lines to Chestnut Hill. There is also an agreement with the Reading Railroad to add service and lower fares on the Fox Chase line. Later stage calls for electrifying the outer five miles of this line.

Long-range plans anticipate integrating to a greater extent the city's subway, surface and elevated lines with the commuter railroads serving the city.

The UTTB also envisages expanded operation of commuter railroads at the policy direction of some public agency.

Far in the future is the plan to connect the two center city terminals of both commuter systems to permit integration of both the Pennsylvania and Reading railroads' services.

The interstate commuting problem between Southern New Jersey and Philadelphia is also under study by UTTB, as well as by the bistate Delaware River Port Authority.

Parsons, Brinckerhoff, Hall & Macdonald, consultants for the authority, have recommended that a new trunk line system from Philadelphia's City Hall run via subway and tube under the Delaware River to a connection with existing Pennsylvania-Reading Seashore Lines in Camden, N. J. This would then fan out over three branch lines. Total project would be 32 miles long and cost $242 million.

Louis T. Klauder & Associates, consultants retained for UTTB, proposed, instead, continued use of the present Locust Street Subway and the Benjamin Franklin Bridge crossing. Cost of this version is $92 million.

Port Authority deemed it unacceptable. A revised plan has been submitted by Klauder. It is being evaluated by a third consultant, Curtin & Simpson. The evaluation will probably try to reconcile the Parsons and Klauder plans.

Another recent development in this area is a $2.45-million, Pennsylvania-New Jersey long-range transportation study. It is now in its first stages.

• **Seattle**—This city is contracting for a monorail running from the main business district to a future exposition site, one mile north. Cost: $5 million.

After the exposition closes, in 1962, the line may become the first unit of an extended transit system.

The city's transit commission is urging an immediate start on a survey of traffic and transportation problems in the Puget Sound metropolitan area.

• **New Orleans**—A monorail between downtown and Moisant International Airport has been proposed for New Orleans. Studies by Col. S. H. Bingham, New York City consulting engineer, have declared it both technologically and economically feasible.

The 16-mile facility would cost about $32 million. A report is now in the hands of the city council.

• **Winnipeg**—The Greater Winnipeg Transit Commission has accepted a recommendation in principle for a rapid transit subway system for the area. Report was made by Norman D. Wilson, Toronto consulting engineer.

The system would be built in nine stages and total 23 miles of route. Further studies are under way.

• **Detroit**—The City of Detroit Rapid Transit Commission reported-in during 1958 a mass transportation plan that strongly recommended a monorail system as its rail transit feature. Last month, the system was rejected and declared impractical at this time.

The monorail system would consist of a primary network of six routes radiating from the central business district. Cost is estimated at $255.6 million for a total of 53.9 miles.

A secondary system for the metropolitan area would take off from these. Eleven routes, totaling 293 miles of radials, cross-area and north-south lines comprise this part.

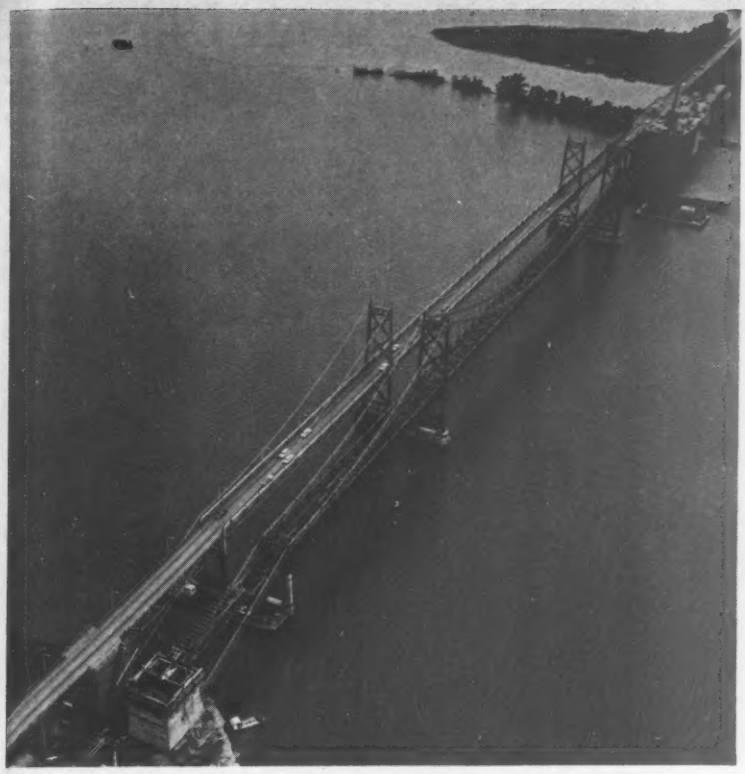
• **Los Angeles**—The city's Metropolitan Transit Authority has begun a general transit service study. Planning of a mass transit system is due to start in 1960.

A 1953 report proposed a 43-mile monorail at a cost of $134 million.

But opinion seems to be that because of the low population density and the scattered employment locations, plus the advanced state of freeways and parking networks, Los Angeles is an unlikely candidate for rail rapid transit.

• **Pittsburgh**—The Pittsburgh Area Transportation Study is now going on.

What type of solution is forthcoming is not yet known. One report in 1953 did contain a discussion of an eight-mile rail rapid transit line estimated at $100 million.



Mississippi span (right) moves a step closer to completion as . . .

Closing truss section is placed.

Steel Closed on Mississippi River Bridge

The steel has been closed on the Iowa-Illinois Memorial Bridge across the Mississippi River near Davenport, Iowa. Early this month a barge-mounted derrick placed the last stiffening truss section—an 8-ton unit, 53 ft long and 14 ft deep.

The structure, which measures 5,017 ft between abutments, is almost identical to an adjacent bridge built in 1935. It includes a suspension structure that measures 1,906 ft, anchorage to anchorage, and that has a main span of 1,480 ft.

The bridge towers are 40 ft wide at the base, 29 ft wide at the top and 140 ft high. They support two main cables 9½ in. in diameter. Each cable is made up of six 1-in. and thirty-one 1¼-in. bridge stands.

To connect the roadway to the main cables there will be 114 suspenders, 1⅛ in. in diameter and varying in length from 6 to 147 ft.

The bridge, which contains 5,250 tons of steel, will be the 39th major highway crossing of the Mississippi River between St. Paul, Minn., and New Orleans, La.

It was fabricated and erected by Bethlehem Steel Co. for the Davenport Bridge Commission. When completed it will carry two lanes of southbound traffic on its 24-ft-wide roadway. The existing bridge, which is only 75 ft away, has a 20-ft roadway that will carry northbound vehicles. A walkway on the old structure will remain in use.

The engineer for the bridge commission is Modjeski & Masters of Harrisburg, Pa. The resident engineer on the project is H. E. Eckhoff. J. B. Gibson is superintendent for Bethlehem.

Narrows Span Gets Formal Start

Ground-breaking ceremonies for what will be the world's longest suspension bridge were held last week at Fort Wadsworth on New York's Staten Island. The occasion ends almost 70 years of dreaming, planning and hassling, and starts a construction project that will cost $320 million and will take six years to complete.

The structure will have a center span of 4,260 ft—60 ft longer than that of the present record holder, San Francisco's Golden Gate Bridge. It will have an over-all length, anchorage to anchorage, of 6,690 ft, and at its midpoint will clear the water by 277 ft.

It will be more than 1,000 ft from the top of the towers to the bottom of their deepest foundation. The towers themselves will rise 690 ft above the water; on the Brooklyn side, tests indicate a need for a foundation more than 300 ft below water level. The double-deck 12-lane structure will be supported by four main cables each 35⅞ in. in diameter and each containing 26,108 wires. In all, the bridge will take 142,500 miles of wire.

The Narrows Bridge is being built by the Port of New York Authority for the Triborough Bridge and Tunnel Authority. Preliminary design studies have been made by Ammann and Whitney, New York consulting engineers. All major contracts are still to be let; only foundation investigations have been contracted. Ammann and Whitney has design under way.

The bridge—Staten Island's first vehicular link with the rest of New York—will permit through traffic to New England to bypass Manhattan.

TVA Will Construct New Steam Plant

The Tennessee Valley Authority jumped into action last week with its new bond-financing power. Directors of the agency announced plans to build a new steam generating plant and awarded contracts totaling $26.5 million for turbine-generators.

Following a meeting last Thursday in Knoxville, the board of directors said a new plant would be built somewhere in the western TVA area. TVA's area encompasses parts of seven states. Tennessee and Alabama comprise most of the western section.

Herbert D. Vogel, chairman of the board, said the agency awarded contracts for two turbine-generators with a combined capacity of 1.1 million kilowatts. One of these, he said, will be the initial unit in a new plant to be built probably in western Tennessee. The smaller one will probably be installed at an existing plant.

The bigger unit will be the biggest turbine-generator in the world, it is believed. Its generating capacity will be 600,000 kilowatts. General Electric will build it at Schenectady, N. Y., under an $18-million contract. It will go into operation by Sept. 1, 1962.

The other turbine-generator will have a capacity of 500,000 kilowatts. Brown-Boveri Corp., a Swiss firm, will build it under an $8.5-million contract. The unit is expected to be in operation by Aug. 1, 1963.

The generators will be financed from the first revenue bonds ever issued by TVA. The agency took bids in June for these and other turbine-generators totaling 6.1 million kilowatts in capacity in anticipation of the self-financing bill that President Eisenhower signed into law two weeks ago (ENR Aug. 13, p. 25). TVA can issue up to $750 million in bonds under the measure to finance its own expansion. A spokesman for the agency said the first bonds under the new law probably won't come out for several months.

The two companies that received the turbine-generator contracts were low bidders on an evaluated basis, TVA said. The evaluation involved such factors as efficiency of the units, delivery time and compliance with the federal Buy-American act.

Ft Randall Tunnel Gets Research Job

Army Engineers hydraulics experts put a 22-ft-dia flood-control tunnel at Fort Randall Dam to work last week as a hydraulic model. Fort Randall Dam is on the Missouri River in South Dakota.

It was an unusual application for a full-size working installation. They dewatered the tunnel, installed instruments and took flow data for four days.

Their objective was to obtain high-velocity, big-tunnel flow data, obtainable up to now only from studies of small-scale laboratory models. Information gained is expected to point the way to economies in the design of big flood-control structures.

The instruments were mounted on a strut spanning across the tunnel. The strut had a cross-section shaped like an airplane wing—22 in. from leading to trailing edge and 5 in. thick.

Water pressures, velocities and turbulence data were measured by the instruments and transmitted, via components encased in the strut, to recording apparatus outside the tunnel.

Flows through the 1,200-ft tunnel during the tests ranged from zero to more than 22,000 cu ft per sec. About 20% of the normal daily releases were used in running the tests, but the effects on power production and downstream water regulation were negligible.

The tunnel used for the tests is one of 12 through the base of the dam for control of river flows from the reservoir. Eight are steel-lined power tunnels that supply the turbines in the 320,000-kw power plant. The other four are flood-control tunnels. The one picked for the tests was chosen because it has a downstream control gate and a steel lining. These two features, respectively, provide finer flow regulation than upstream controls alone and greater pressure capacity than concrete lining.

The tests were made by the Missouri River Division and Omaha District of the Corps of Engineers in cooperation with the Corps' Waterways Experiment Station at Vicksburg, Miss. Results will be made available to the engineering profession as whole, as well as to Corps installations, according to Maj. Gen. Keith R. Barney, Missouri River Division engineer.

E. B. Pickett, chief of the prototype section at Vicksburg, was in charge of the test runs. Coordinators were N. L. Barbarossa, Missouri River Division; E. R. Bloomquist, Omaha District; and F. B. Campbell, Waterways Experiment Station.

Around the World . . .

• **Air bid in Toronto**—The Toronto Parking Authority has invited bids for a 50-year lease on air space above a $1-million, 550-car, five-deck parking garage to be built in midtown Toronto. The successful bidder will have to build an eight-story office building on the garage roof at a cost of about $1.6 million.

• **Math getting popular**—Math and science will get a bigger play in colleges this year, according to the Department of Health, Education and Welfare. Secretary Arthur S. Flemming says the big increase in math study (junior enrollments are 31% over last year) is due to realization that without it "the doors to many careers will be closed."

• **Baghdad prepares for jets**—Iraq's government has revived pre-revolution plans for a $25.2-million airport capable of handling commercial jet traffic. Other construction projects rejected last year will reappear to counter the country's unemployment and economic stagnation.

• **Salt River power**—Construction on a $22-million addition to the Salt River Project's Agua Fria generation plant near Glendale, Ariz., will be started in October. A 168,000-kw turbine generator supplied by General Electric will bring the plant's capacity to 395,000 kw when it is put into service in mid-1961. Betchel Corp. will be contractor.

• **Loans for Haiti, Korea**—The U. S. Development Loan Fund has agreed to advance $4.3 million to Haiti to complete an 80,000-acre irrigation project in the Artibonite Valley and $1.5 million to the Korea Electric Power Co. for engineering work on a 150,000-kw hydro job at Chung Ju.

• **Traffic in 1980**—Ohio is starting a $710,000, 18-month survey to determine the 1980 traffic load for every one of its highways, roads and streets. Aim is to know where to build, repair, widen and improve. Survey will also result in taxing recommendations.

HOW TO HANDLE WET JOBS

#50 of a series

Project: Pumping Station, New Brighton, Penna.
Consulting Engineer: Michael Baker, Rochester, Penna.
Contractor: Engstrom & Wynn Company, Wheeling, W. Va.

Soil bouldery, sheeting impractical; wellpoint system solves tough ground-water problem as . . .

New-type Holepuncher Installs Wellpoints

Patent applied for

Since the work site consisted of coarse sand and gravel with many boulders, Engstrom & Wynn were faced with a very difficult and expensive job if they chose to drive a steel sheet pile cofferdam to handle their ground-water problem.

• **They were satisfied,** as was the consulting engineer, that a system of Griffin's extra-capacity "Aquahog" wellpoints would control the ground-water volume, but there remained the question: could the wellpoints be installed through the obstructing boulders?

• **The photo shows the answer:** successful installation achieved with a new "sliding-weight" holepuncher* developed by Griffin engineers. 16 ft of ground water was lowered without difficulty.

• **Using open cut and wellpoints installed with the new holepuncher,** the contractor's cost proved to be just a fraction of what it would have been with sheeting. This same economical Griffin method has recently been used at Titusville, Oil City and Warren, Penna.

*Patent applied for

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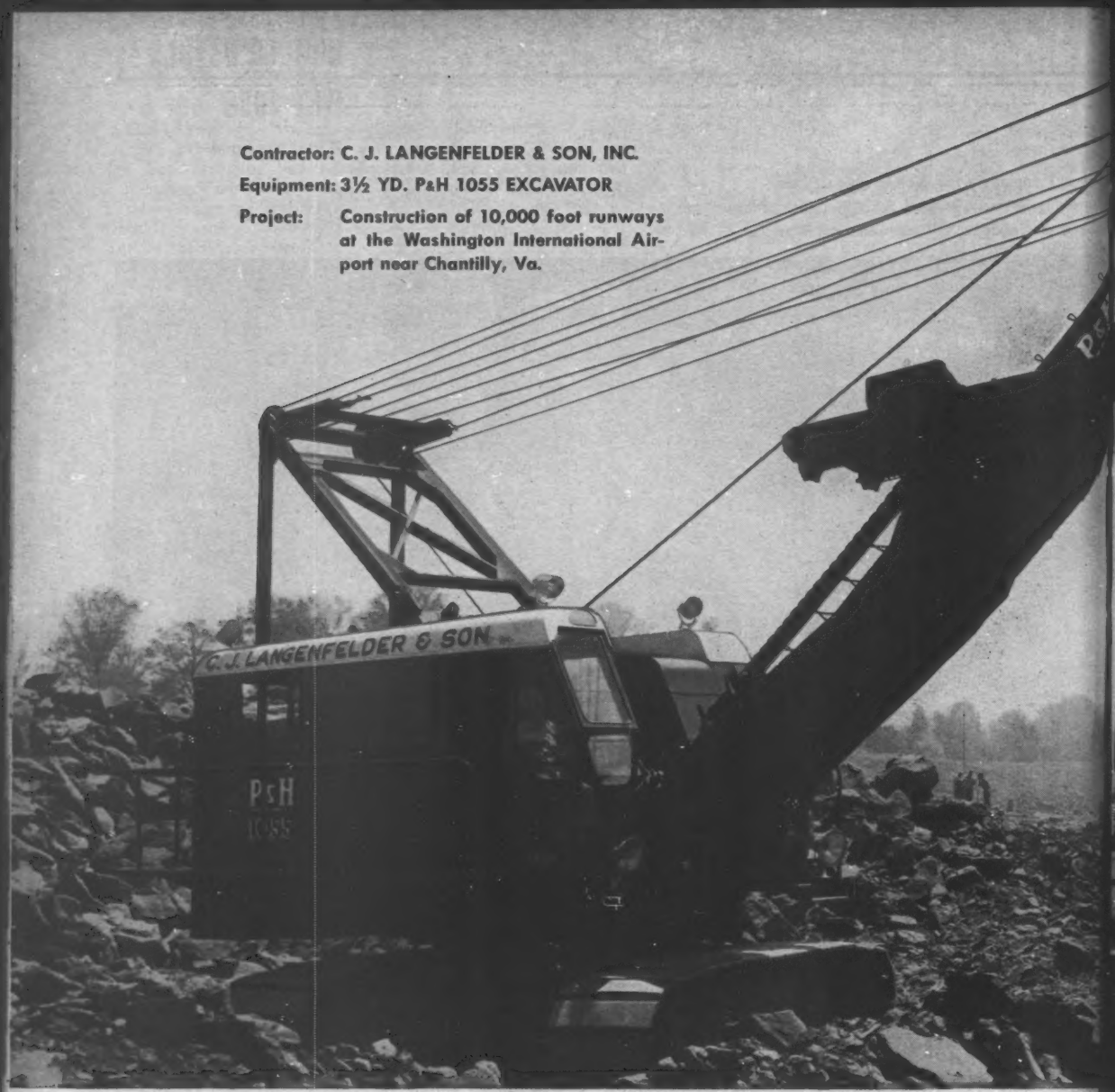

Contractor: C. J. LANGENFELDER & SON, INC.
Equipment: 3½ YD. P&H 1055 EXCAVATOR
Project: Construction of 10,000 foot runways at the Washington International Airport near Chantilly, Va.

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Prestressed concrete will be one of three types tested at Biggs Air Force Base.

Taxiway Is a Concrete Laboratory

One part of a $7-million upgrading of Biggs Air Force Base near El Paso, Tex., may some day play an important role in the design and construction of concrete pavements for airports. That part is known as Taxiway T-3.

Taxiway T-3 is being built in sections of three types of concrete pavement: conventional, 24-in. thick; reinforced, 19 in. thick; and prestressed, only 9 in. thick.

It's the first time prestressed concrete has been used on an operating taxiway.

The purpose of the taxiway work is three-fold:

- To determine the relative economics of non-conventional pavements as opposed to that of conventional pavements.
- To indicate the conditions under which a non-conventional pavement might be more practical than conventional types.
- To check on the validity of certain design criteria and installation methods for nonconventional pavements being tested.

Since the various sections of the taxiway will carry the same airplanes traveling at the same speed and in the same number, a comparative analysis of the three pavement types will be simple and accurate.

Here are some of the advantages hoped for through the use of non-conventional pavements:

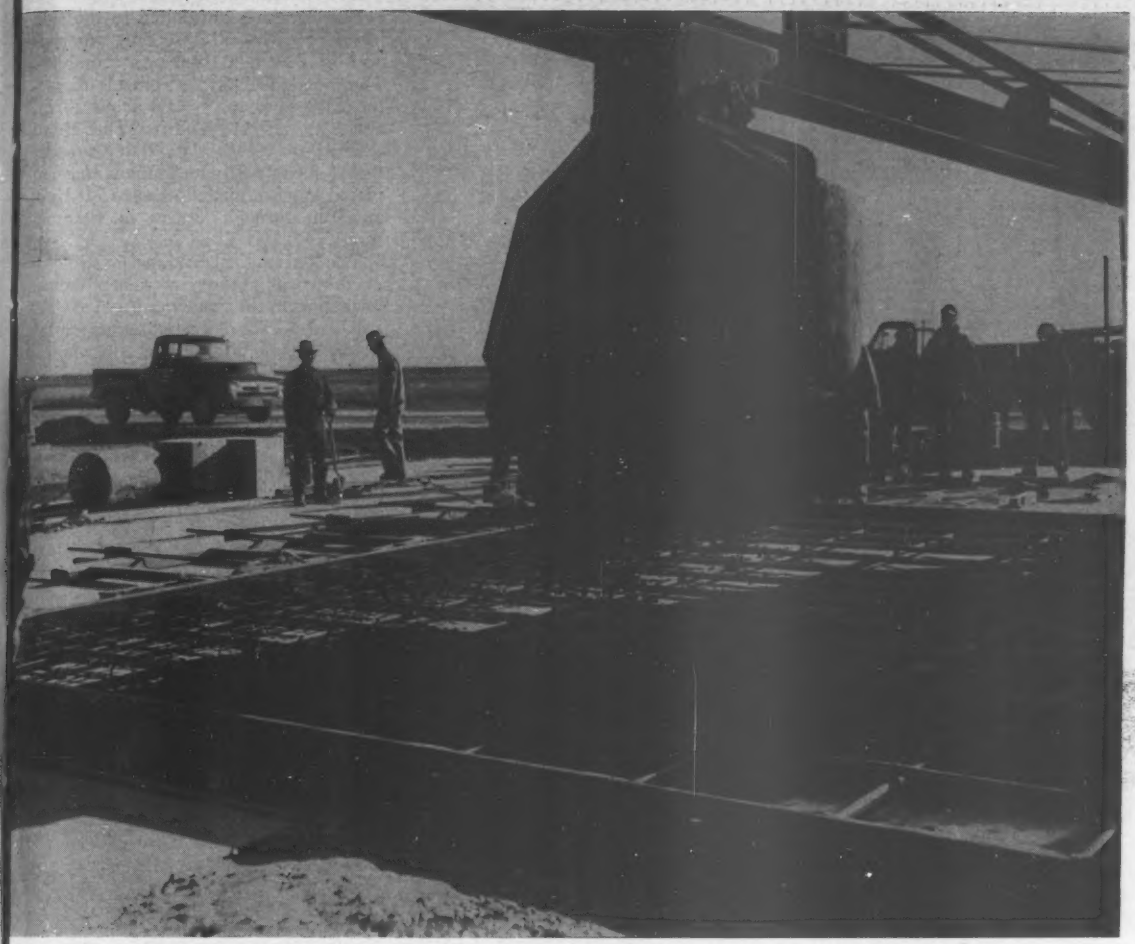
- Savings in materials—which may be important in remote locations or in emergencies.
- Reduction in the number of control joints—which are often difficult to keep watertight, which are subject to spalling, and which cause bumpy surfaces through heaving of sealing compound.
- Better servicability.
- Economy of construction.

The experimental taxiway work is included in one of several contracts for an over-all modification of Biggs AFB to set it up for fleets of B-52 jet bombers belonging to the Strategic Air Command.

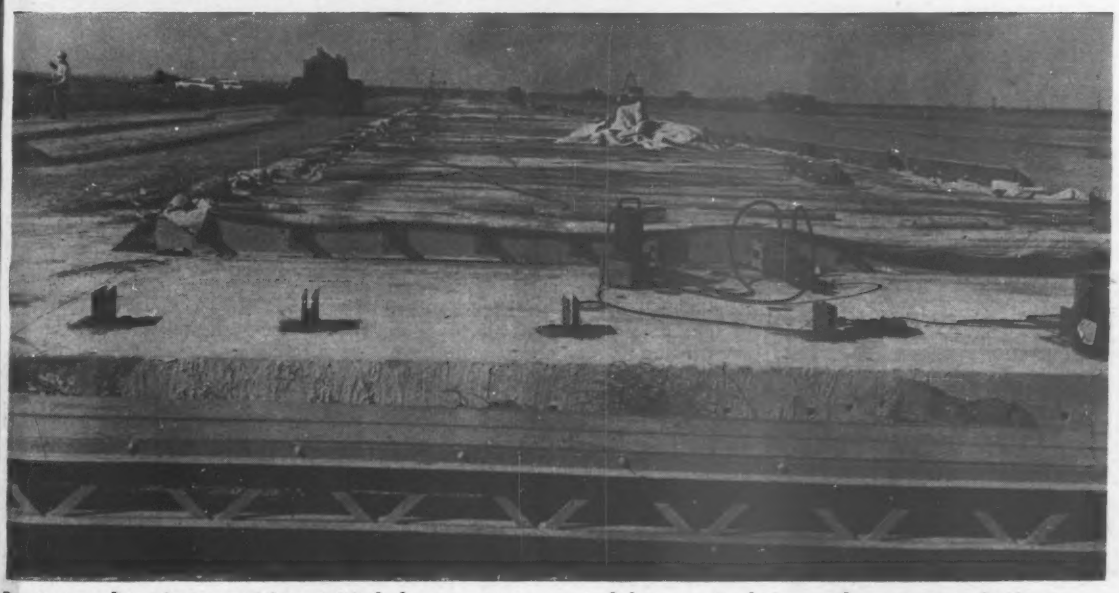
The remainder of the project involves strengthening and lengthening a runway, taxiways, and parking apron. The work, which was started in June of 1957, is now in the clean-up stage.

Taxiway T-3 is 5,275 ft long and runs generally in a north-south direction. Starting from the northern end, it consists of:

- 1,625 ft of conventional non-reinforced concrete, 24 inches thick with transverse control joints spaced 25 ft



Concrete is placed over tendons, which rest on rigid conduit for transverse wires.



Prestressed taxiway section, 500 ft long, rests on gradebeam. Jack is set for post-tensioning.

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PHOTOS: U. S. AIR FORCE

HOLDING RING SEGMENT is placed between anchorage and bearing plate before the prestress is applied.

apart. (This section is only two lanes wide, totaling 50 ft.)

- 1,550 ft of reinforced concrete, 19 inches thick. (This section and all subsequent sections, are three lanes wide for a total of 75 ft.) Specifications for the transverse control joints permitted placement at 95-ft intervals, but the contractor elected to install them 75 ft apart.
- 1,550 ft of prestressed concrete, 9 in. thick.
- 550 ft of conventional non-reinforced concrete 24 in. thick. (This is the same as the northernmost 1,625 ft, except that it is three lanes wide.)

The base and subgrade material beneath all three types of pavement is the same throughout. Immediately beneath the concrete is 6 in. of selected aggregate with a 100% compaction; beneath that, 6 in. of subgrade compacted to 97% overlying 6 in. of subgrade compacted to 92%.

The 9 in. slabs of prestressed concrete are placed in three 500-ft sections, with a gap of about 15 ft between section ends. Spanning these gaps and beneath the bottom of the slabs is a grade beam that serves as a support for the end forms and as an anchor point for the longitudinal tendons before placement of the concrete. (As one of the last steps in the paving operation, this gap is filled with 9 in. of reinforced concrete and finished to provide a riding surface between the prestressed sections.)

In constructing each of the 500-ft slabs, the center lane is formed first. To reduce friction between the base course and the slab bottom, the base course is covered with ½ in. of sand. This in turn is covered with a waterproof paper on which the concrete later is placed.

Bearing plates are bolted to the side forms of each 500-ft section, for support of 223 rigid transverse conduits. These conduits have an outside diameter of 1.66 in., are spaced about 27 in. apart, and are set on chairs 2⅞ in. above the bottom of the slab. They support the 13 flexible 12-wire tendons that are placed longitudinally in each 25-ft lane, and run through sleaves in the end forms.

The longitudinal tendons are straightened two at a time by yoke attached to anchors in the grade beams. A 10,000 psi load achieved by tightening a nut on the yoke, puts an initial 2 in. elongation in the tendons. The longitudinal tendons are then tied to the transverse conduits and concrete is placed, finished and covered.

When cylinder tests show a strength of 870 psi, jacks are attached to the longitudinal tendons and are extended to exert a pull of 20,700 lb. This stresses the wires to 35,100 psi at the jack and results in an elongation of about 7½ in.

When the concrete reaches a strength of 4,050 psi, the tendons are given their final post-tensioning. A two-minute overstress of 192,000 psi (jack force of 113,000 lb.) elongates the wires by more than 18 in. The wires are then anchored at a tension of 168,000 psi and an elongation just under 18 in. This process is repeated for each of the two outside lanes.

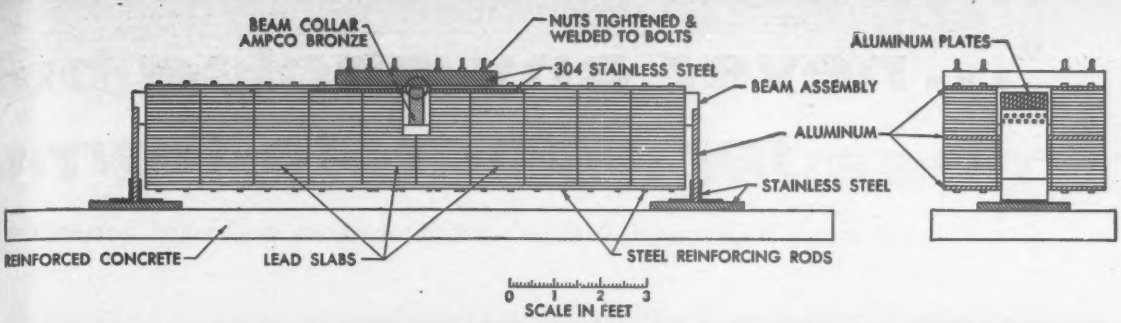
When the longitudinal post tensioning is completed, six wires are fed through each of the transverse conduits, which are aligned in all the lanes, and the three lanes are stressed as a unit. A two-minute overstress of 180,800 psi is followed by an anchorage at 168,000 psi and an elongation of about 5½ in.

On completion of the post-tensioning, the longitudinal and transverse units are pressure grouted.

The Air Force requested construction of the test sections at an active air base so that it can study construction techniques, comparative costs and results. To develop valid design criteria and construction techniques for nonconventional pavement types, the information obtained during construction and first years of service at Biggs AFB will be correlated with results of theoretical, model and full scale traffic tests being conducted at the Corps of Engineers' Rigid Pavement Laboratory.

J. W. Lowe, Jr. is project manager for the contractor, H. B. Zachary Co., San Antonio. F. O. Reeves is resident engineer and R. J. Hernes is project engineer. A. L. Reed is district engineer, Albuquerque District of Corps of Engineers.

Technical advice on the test sections is provided by F. H. Williams of the Corps' Ohio Division Laboratories.



LEAD – 592 slabs totaling 25 tons – is used as a damping mass to confine vibration and noise to the test area and to dissipate energy.

MINNEAPOLIS-HONEYWELL researchers investigate the effects of vibration on the drift rate of gyros and accelerometers. Here, actual vibrations and mechanical noise produced by a missile or space ship are exactly duplicated.

Lead Controls Vibration in "White Noise" Room

The "White Noise" Room of Minneapolis-Honeywell Regulator Co.'s Inertial Guidance Center at St. Petersburg, Fla., is another example of Lead's usefulness in controlling vibration and noise. "White Noise" is so called because it includes several frequencies of the noise spectrum, just as white light is a blend of several frequencies of the light spectrum.

Lead lends many advantages to this installation. It is massive and an excellent internal viscoelastic damper. Lead's high specific gravity permitted design of the mass within height limitations . . . and the low structural center of gravity also minimized effects of spurious vibrations, force couples, etc. Lead is nonferromagnetic and eliminated magnetic field disturbances which would interfere with other work in the area.

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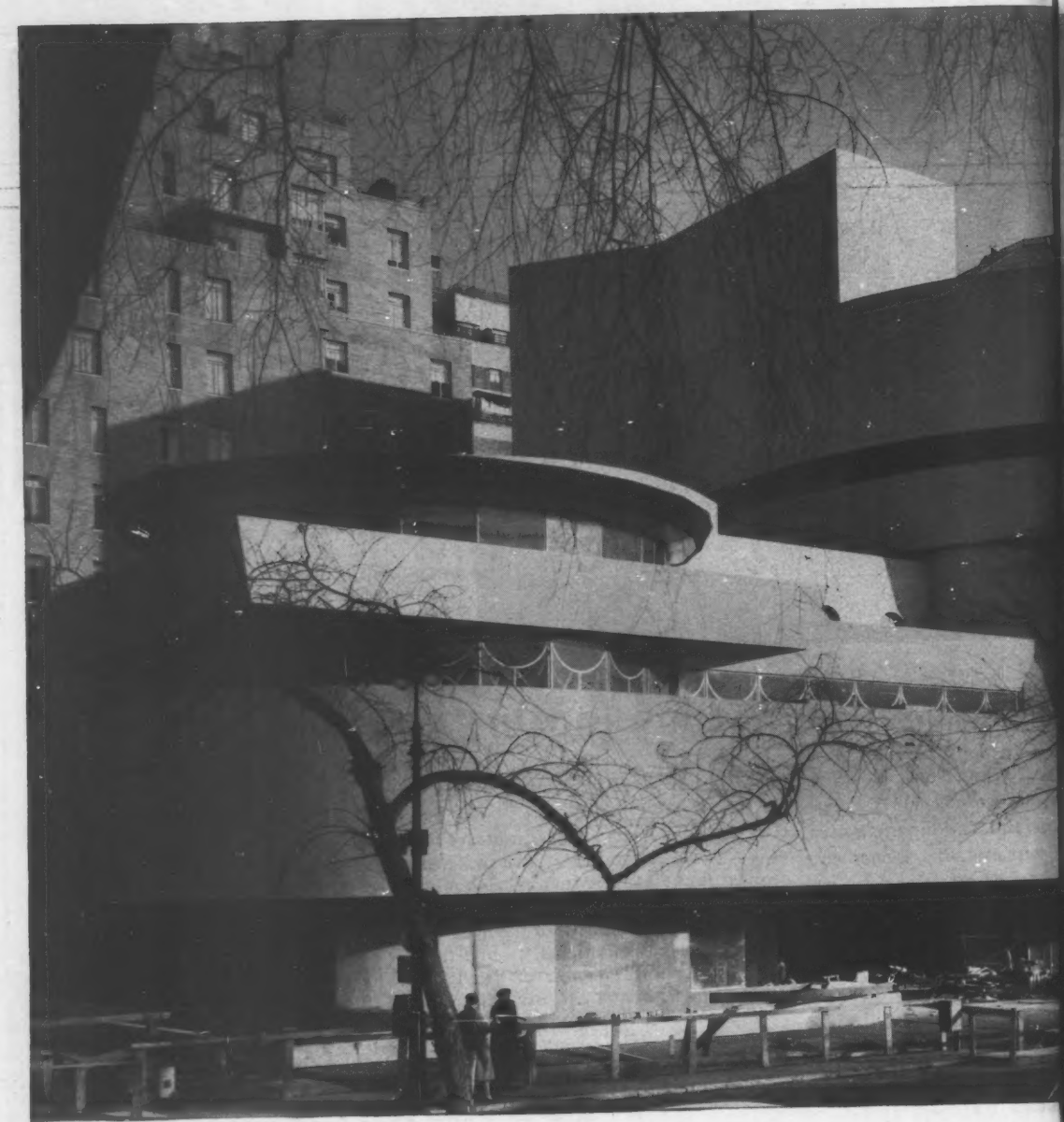

PHOTOGRAPH BY EZRA STOLLER

OLOMO
OCATIO
RCHITE
ENERA

...ou fir plywood
...nson Guggenheim Museum"

...ys Charles Spero, job superintendent, Euclid Contracting Corporation

...OLOMON R. GUGGENHEIM MUSEUM
...OCATION: New York City
...RCHITECT: Frank Lloyd Wright
...ENERAL CONTRACTOR: Euclid Contracting Corp.
New York City

Once again, fir plywood's superiority as a form material is dramatically demonstrated—on Frank Lloyd Wright's Solomon R. Guggenheim Museum, New York City. Plywood was used almost exclusively for the form work on all walls, on the curving ramps, and even on the 4-foot diameter columns.

"The job could not have been done without plywood," says Superintendent Spero. "Because everything is curves here, of constantly changing radii, there was never any other choice. It's smoother, certainly more durable, and cheaper in the long run."

Other advantages cited by Mr. Spero: handling ease, a minimum of cutting, a reduction of finishing time, very little backing required.

Put plywood's advantages to work for you. For information on specification and use, write (USA only):

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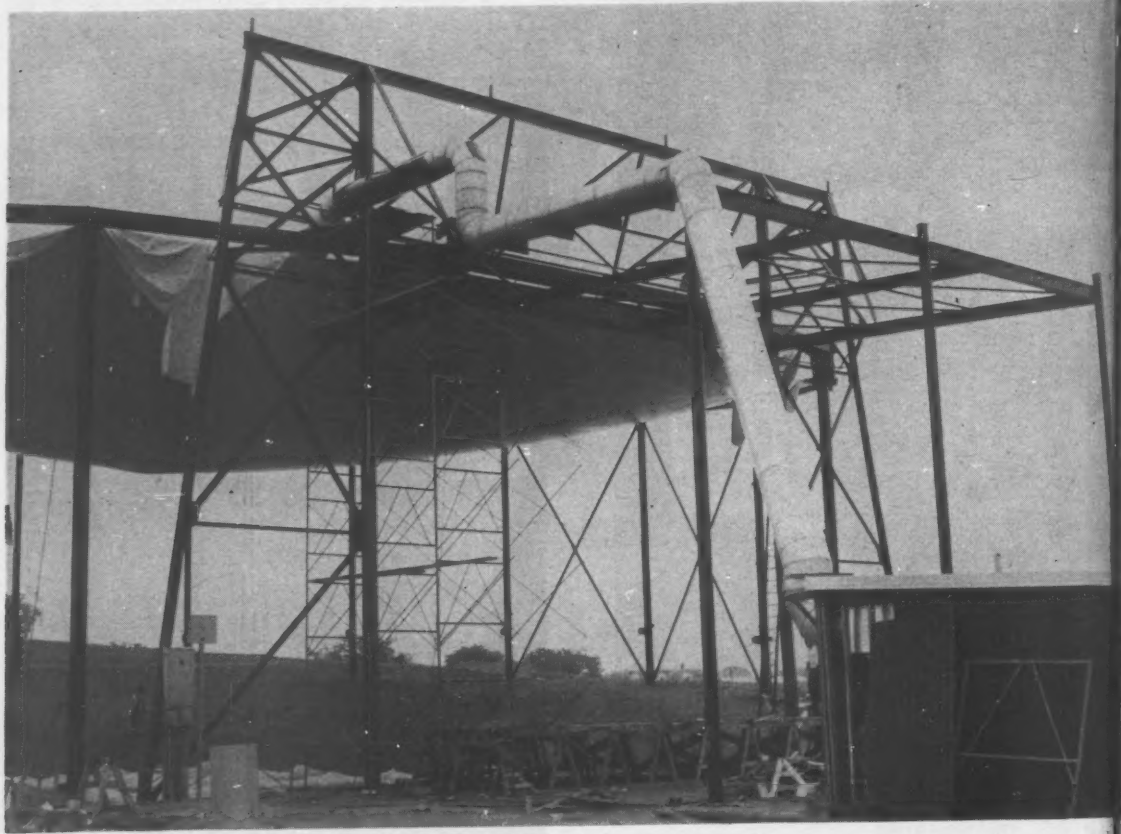
OVERLAID PLYWOOD—special panel with hard, glossy, plastic-like fused resin fiber surfaces. Forms smoothest concrete; up to 200 re-uses.

Air-Supported Nylon Membranes Ro

Lens-shaped roof of theater in Boston Arts Center is supported on a 145-ft dia ring of columns.



Round duct feeds air to the plenum between the two roof membranes to maintain air pressure.

Roof Theater

A delicately balanced, nylon, lens-shaped roof, 145 ft in diameter, has been constructed for a building on the banks of the Charles River in Boston. Attached along its perimeter to a steel compression ring and supported by 12-in.-dia pipe columns, the lightweight roof covers the summer theater of the Metropolitan Boston Arts Center.

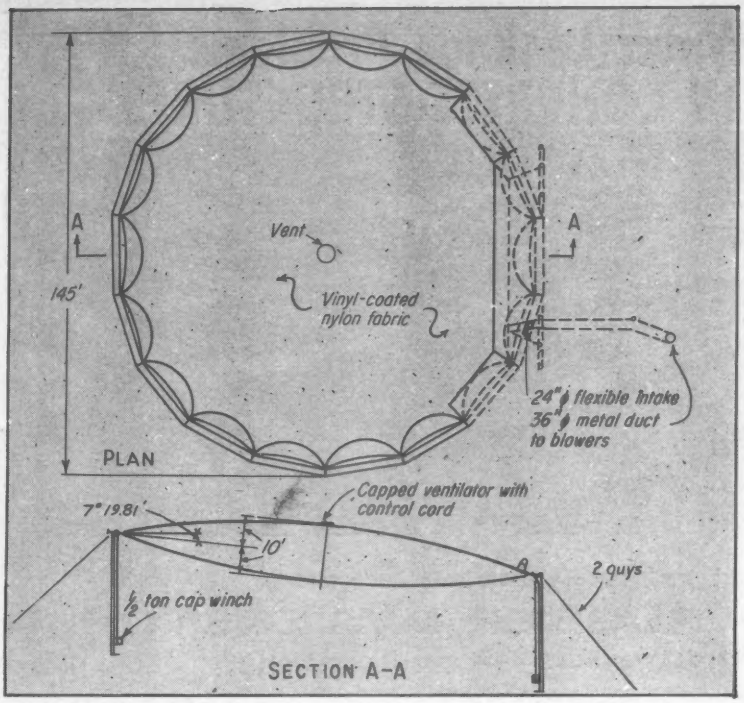
Paul Weidlinger, consulting engineer, New York City, conceived the idea for this type of air-inflated roof more than 10 years ago for military applications. He described it as ". . . a large air-tight, sealed envelope of thin sheet metal or other materials, which is kept rigid with compressed air between both surfaces and which in its inflated form resembles a large cushion . . . Placed on the walls or columns of a building, it forms a rigid roof structure and roofing."

This first commercial application of Mr. Weidlinger's idea came about when Architect Carl Koch of Cambridge, Mass., wanted to design a summer theater without using the usual tent with its inherent disadvantages—the necessity of a center pole; susceptibility to high winds; poor acoustics.

The idea of the air-inflated roof was enthusiastically accepted, since it provides a 16,000-sq-ft column-free area. Other factors in its favor are ease of erection and lowering (in case of hurricane), good acoustical properties (this was also the reason for tilting the roof) and freedom of stage location, which makes it possible to have both a proscenium and projecting Elizabethan stage.

• **Convertible to permanent**—Although the building is conceived as a temporary summer theater, all elements are designed to be incorporated into a permanent structure of reinforced concrete and steel. The nylon dome itself will serve as formwork for a reinforced concrete shell. It will be supported on the present steel structure, which is to be fireproofed in the final phase. Consequently, a very large percentage of the initial expenditures for the temporary structure can be recovered in the final construction.

Because of difficult site conditions and the large amount of fill used, very large settlements are anticipated in the first five years. The flexible steel and nylon construction is not sensitive to these displacements, while the final concrete construction will be executed after the major part of the settlement has occurred.



CIRCULAR FRAMING is guyed to the ground to resist uneven load distributions.

• **Built over a bog**—The theater stands on a peat bog, which had to be filled and built up with some 70,000 tons of stone and gravel fill to form the final seating dish. Column foundations consist of wood piles with a 35-ton capacity and a concrete pile cap surmounted by 20-in.-dia concrete piers. These are tied 6 in. below grade with a 12x14 in. concrete grade beam running around the perimeter of the seating dish.

Columns are spaced 25 ft c-c and stand an average of 40 ft high. The 27WF compression ring atop them consists of 18 segments with milled ends connected over the columns and seated on cap plates. (Two of these butted joints are picked up by a girder over the proscenium arch.) Plates projecting from the beam at these joints pick up the roof by a pin and shackle attachment.

The steel ring is guyed to the ground to prevent buckling resulting from an unequal distribution of load on the roof.

• **Lens-shaped roof**—The roof consists of an upper and lower spherical membrane of vinyl coated 5.5-oz., 840-denier-per-yd nylon. Each membrane is made of 108 panels with electronically sealed joints. The material is flame resistant. The two layers were manufactured separately and were joined together along the perimeter with an oversized zipper.

The depth of the roof at the center is 20 ft, which is equivalent to a 255-ft radius of curvature for each membrane.

The nylon membrane is stabilized by internal air pressure, which produces tension in both surfaces. The upper surface acts, therefore, as a pretensioned dome, while the lower surface serves to contain the air.

Since the structure is used during the summer months only, no significant live loads besides wind are considered. The effect of wind forces is manifested by a relatively small, localized lift near the leading edge of the surface. The magnitude of the lift is reduced by the steel ring, which acts as a "spoiler."

Some of the data on anticipated aerodynamic effects were obtained by comparison with wind tunnel tests performed on circular airfoils (i.e., flying saucers).

Under a uniform load of 10 psf, the membrane stress is 106 psi. The stress in each membrane is picked up along the perimeter by a plastic-coated aircraft cable draped as a catenary between points of support. It gives the edge a scalloped appearance.

Since the catenaries were necessarily deep, the fabric was extended beyond them to a third smaller cable, to bring the edge of the roof closer to the supporting ring.

(*Turn the page*)

By Matthys P. Levy, *chief designer for Paul Weidlinger, the consulting engineer who conceived the idea for this air-inflated roof more than 10 years ago.*

Water Leakage Problems IN CONCRETE STRUCTURES?

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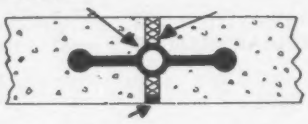

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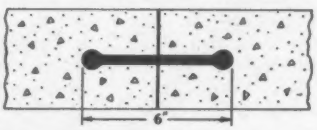

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. . . Air-supported roof

• **Low pressure maintained**—The operating pressure of 0.02 psi in the roof is maintained by two 3,000-cfm blowers mounted behind the theater and connected to the roof by a 24-in.-dia duct. A vent attached to the top surface of the roof, to provide continuous ventilation, limits the temperature rise due to solar radiation to between 15F and 25F above ambient. This vent shuts off automatically to prevent excessive loss of air, and a discharge damper on the blowers similarly protects the roof in case of power failure.

Because of the large volume (17,000 cu ft) of air contained at the very low pressure, the dome is quite insensitive to losses due to leakage or puncture—the air will escape very slowly (in several hours or even days). Even complete deflation will not cause collapse; the nylon envelope will remain suspended from the steel ring.

The structure is extremely light. The nylon dome itself (both layers), cables and zipper weight slightly over 0.3 psf, which makes it probably the lightest dome structure of this large span. The steel structure, designed to take the weight of the future reinforced concrete shell, weighs 70 tons.

• **Fast erection**—After all the steel was erected, shackles were installed at each of the 18 points of attachment around the ring. The two layers of the roof, laid out on the ground were zippered together.

For lifting the roof, a special fitting was used at the point of attachment where all three catenary cables come together. Here, two lifting cables were attached. These were slung over two sheaves permanently mounted on the beam, one on each side of the shackle, and attached to a hoisting winch placed on each of the columns. After all the points of attachment were thus rigged, the roof was lifted uniformly to its final position. The shackle pin was dropped into the cable fitting and the lifting winch was released.

The dome was raised in three hours. The steel had been erected in one week.

Margaret Ross was in charge of design and supervised construction for the architect, Carl Koch and Associates, Cambridge, Mass. Paul Weidlinger and Mario Salvadori, Associate, were the consulting engineers.

The nylon roof was manufactured by Birdair Structures of Buffalo, N. Y. Bolt, Beranek and Newman were acoustical consultants. Harold Young supervised construction for the general contractor, M. Solimando. Foundations were by C. J. Maney Construction Co., and steel fabrication was by West End Iron Works, Cambridge, Mass.

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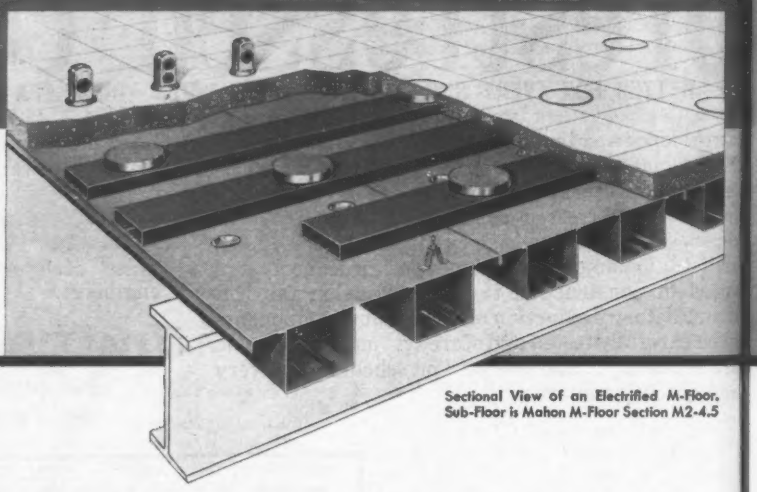

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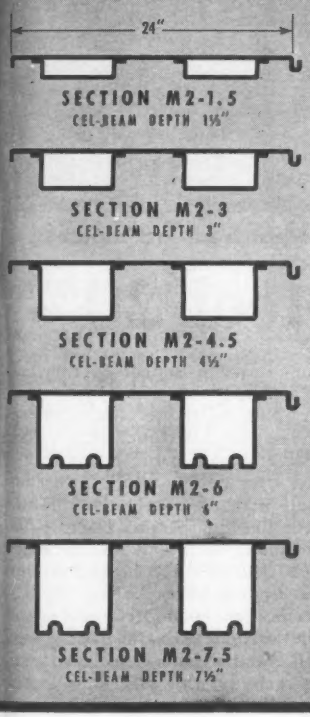

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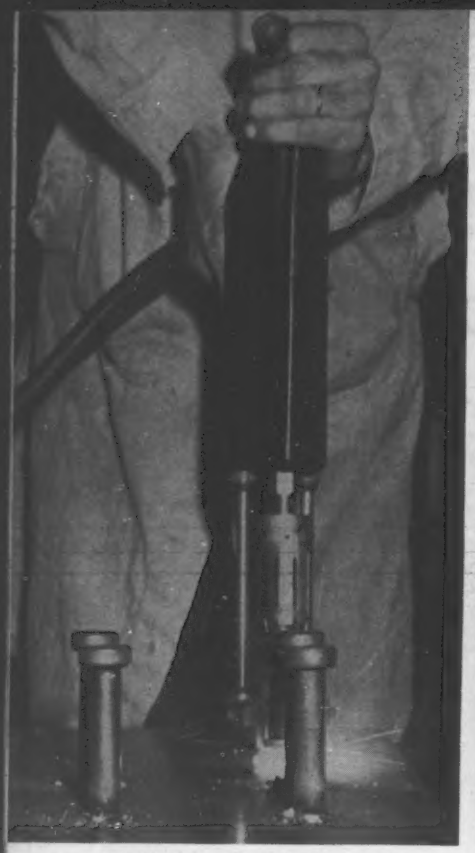


Welded steel studs insure that...

Steel frame and concrete floors of a research lab act together.

Composite Design Cuts Steel 20%

A new laboratory for Chas. Pfizer Co., Inc., at Groton, Conn., is the largest building yet constructed with composite steel and concrete framing.

The composite action was insured by welding steel studs to the top flanges of the steel floorbeams and later embedding them in the concrete floor slabs. This made it possible to use lighter, shallower beams than those designed by conventional methods.

Passage of piping and duct work in ceiling construction was also facilitated with shallower beams, while a minimum depth of floor construction was maintained.

Preliminary studies of alternative framing schemes had indicated that composite construction would show a substantial economy in structural steel tonnage, offset only slightly by the cost of the welded studs. This was confirmed by steel fabricators. Their bids for the stud-welded beams proved to be in line with the cost of conventional steel framing. (Many steel shops have fabricated stud-welded beams for highway bridges and are well experienced in this form of construction.)

The Pfizer building contains 1,000 tons of structural steel. This is about 200 tons less than would have been required with conventional designs.

No specifications are presently available for design of composite construction for buildings. The design of the Pfizer laboratory followed applicable portions of the "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction and the "Building Code Requirements" of the American Concrete Institute.

The floorbeams are spaced about 8 ft c-c. They are spanned by a 4-in. concrete slab with a specified minimum 28-day strength of 2,500 psi. The top flanges of the beams are set into the bottom of the concrete slabs.

The concrete floor slabs are reinforced with welded wire fabric draped from the top of the slab over the beams to the bottom of the slab at midspan. The slabs were designed conventionally as continuous spans, similar to noncomposite construction.

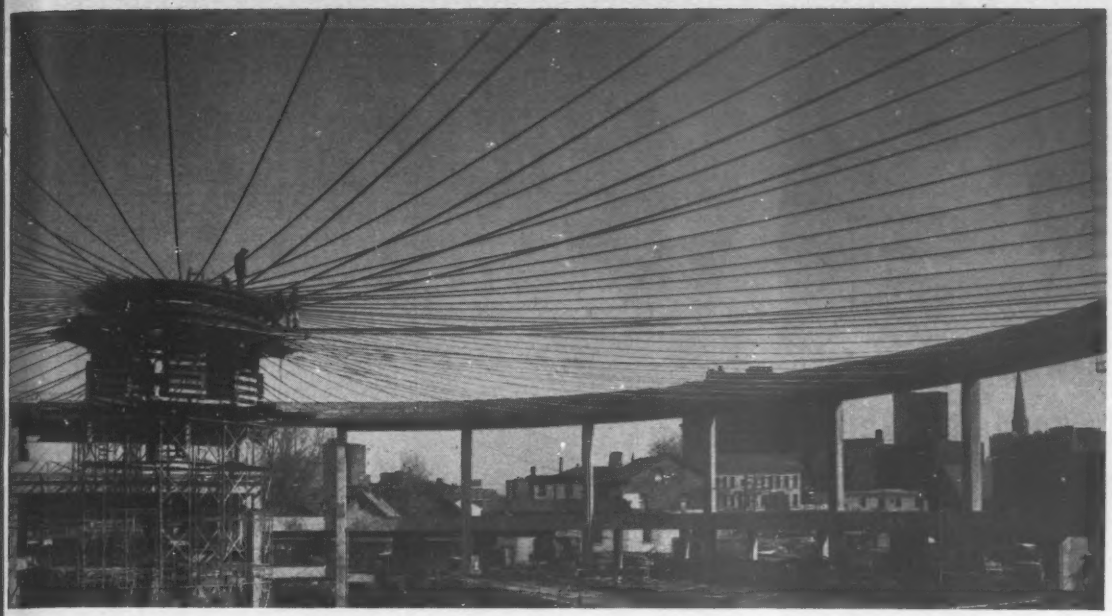
The studs, which are ¾ in. in diameter by 3 in. long have upset heads. They were shop welded to the beams with a manual stud welding gun. Two lines of studs were used for interior beams and one line for spandrel beams. The spacing along the beams was decreased near the ends to resist the greater horizontal shearing forces.

Specifications permitted field welding of the studs after the beams were erected. Several bidders had expressed a preference for this procedure, anticipating difficulty in stacking stud-welded beams for shipment and possible breakage of studs in handling. However, the steel fabricator elected to shop weld the studs and experienced no difficulty in handling, shipping and erection.

In effect, the welded studs perform the same function as rivets in a builtup girder; they transfer horizontal shearing forces from the girder to the cover plate. In composite construction, the concrete slab serves as the cover plate.

In the Chas. Pfizer laboratory, the floorbeams were designed to support the dead weight of the wet concrete.

By Aaron Garfinkel, partner in Garfinkel and Marenberg, consulting structural engineers of New York City.



Unique Roebling-Designed Tensioning System used to Erect Suspended Roof Cables of Utica Civic Auditorium

The new Utica Memorial Auditorium at Utica, New York introduces two new principles to the field of suspended roof construction: A double layer of hung cables and a new method for tensioning the cables, devised by John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Though it is designed in the simplest of all suspension building forms, the double layer cable principle is an exciting departure; each layer being tensioned to a different value.

Aside from furnishing the 72 pairs of cables for the structure, Roebling's role included erection by means of a unique method. Sleeves were accurately placed in the outer concrete compression ring by the General Contractor and after the concrete had cured, an accurate survey was made of the location of all cable connections in the outer concrete ring. The roof cables were prestretched and accurately measured under theoretical dead load stress at the Roebling plant. Thus, the necessity of excessive adjustment on the end connectors and additional adjusting costs at the site were eliminated.

In the finished structure, the two center tension rings are 20 ft. apart vertically. Both these rings were erected on scaffolding to a calculated predetermined erection elevation. The strands were then erected and set to their theoretical final adjustment at the *outer* concrete ring (approximately 2%-3% of their final tension). The scaffolding was then removed from under the center rings after which hydraulic jacks were used to progressively jack apart the upper and lower rings to a distance of 20 ft. This uniformly increased the tension on the 72 upper and the 72 lower roof cables. Vertical stanchions between the upper and lower cables were then installed, further increasing the tension in the cables to that required by the engineers.

Here is an example of Roebling service above and beyond furnishing top quality prestretched galvanized bridge strand. It is a service based on full familiarity and long experience in designing and erecting suspension systems of *all kinds*. This collective knowledge and background is yours for the asking. We welcome inquiries of any nature bearing on suspended roofs or the suspension principle.

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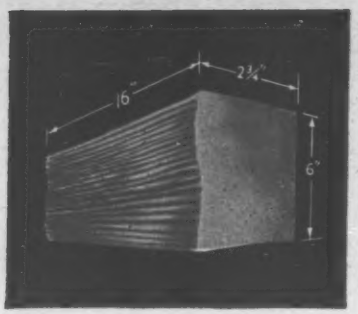

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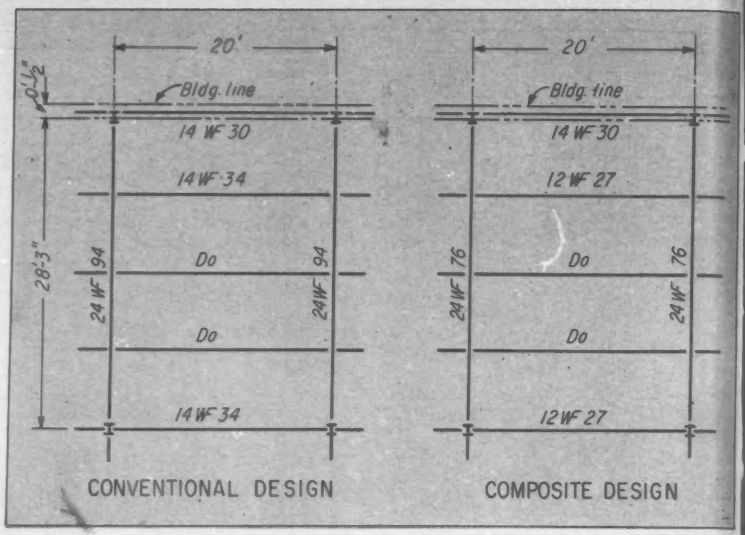
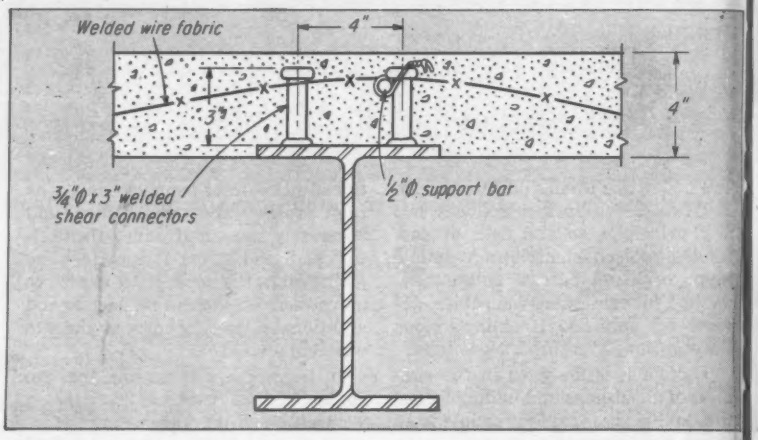


ALTERNATIVE FRAMING PLANS for a typical bay show a saving of about 7 lb per ft and 2 in. of depth for the steel floorbeams.



STUDS atop beam flange carry a support bar for the wire-fabric reinforcing of the floor slab. The bar is tied to the studs at 4-ft intervals.

and the composite sections were designed for the total dead and live design loads. No shoring of the steel or concrete was required.

Composite construction may be designed so that the steel beams are temporarily supported by shores during concrete placement and curing. In that case, the composite section is designed to support the total dead and live design loads. Lighter steel sections may be used, but the saving is largely offset by the cost of the shoring. The steel sections may be further reduced in weight by using a bottom steel cover plate. This expedient was not used in the Pfizer building because the weight differential was not large enough to justify the added cost of the cover plate.

An interesting construction feature was the use of the studs to replace high chairs. A ½-in. support bar was wire-tied at about 4 ft intervals to the upset head of one line of studs over each beam. The wire-fabric slab reinforcement was then draped over the support bars. This supporting system was sufficiently rigid to carry the weight of workmen and to prevent displacement of the mesh during concreting.

The Chas. Pfizer building is three stories high and contains a laboratory wing 210 x 206 ft and a pharmacology wing 100 x 218 ft.

Architects are Shreve, Lamb and Harmon Associates; structural engineers are Garfinkel and Marenberg; and the general contractor is W. J. Barney Corp. All are New York City firms. Structural steel was fabricated and erected by Elizabeth Iron Works, Elizabeth, N. J. Shear connector studs were supplied by Nelson Stud Welding Division of Gregory Industries, Inc., Lorain, Ohio.

Some Ideas

for your file of practical information on drafting and reproduction from

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LAMINENE is available in White or Eye-Ease Green; plain or with 4 x 4, 8 x 8 and 10 x 10 grids to the inch, which act as permanent two-way tracing guides. A free sample can be yours in a few days if you write us today. If you've never tried a laminated board cover, we promise you a new experience!

Stickers With Delayed Action

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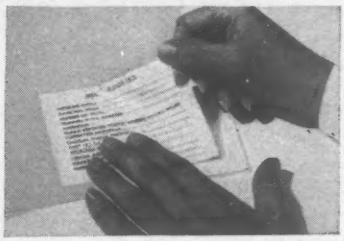

—clearly and sharply—on DULSEAL™ (74). This tissue-thin film has a delayed-action adhesive on the back, and a dull-finish face for easy writing or printing. Stickers made of Dulseal can be firmly positioned—and re-positioned hours later, just as firmly. The adhesive takes 24 hours to set. Once it does set, a permanent bond is formed with the paper or cloth beneath. Dulseal is chemically stable, and the adhesive will not bleed, even in hot copying machines.

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3 To Keep Clean

Best way to keep your tracings clean: don't let them get dirty. A mighty easy way to achieve this is to sprinkle the tracing lightly with gum eraser particles, while working. Then, triangles, T-squares, and scales stay clean, and clean the surface *automatically*, as they are moved back and forth. The particles will not dry out or harden—they contain no grit or abrasives. They'll actually improve the ink taking qualities of your drafting surface.

For this purpose, K&E supplies cleaning particles put up in three different ways. We think the new plastic squeeze-bottle (3036C) is the handiest of all. The shaker-top can (3036) has also been a drafting-room favorite for some time. And, for double-duty cleaning, we suggest the ABC Dry-Clean Pad™ (3037), which holds slightly coarser granules that sift through soft mesh. The ABC Pad also comes in handy for wiping a complete tracing after it is finished, or for preparing certain surfaces for ink work. Or for an overall pre-cleaning, since the best way to insure clean tracings is never to let soil build up.

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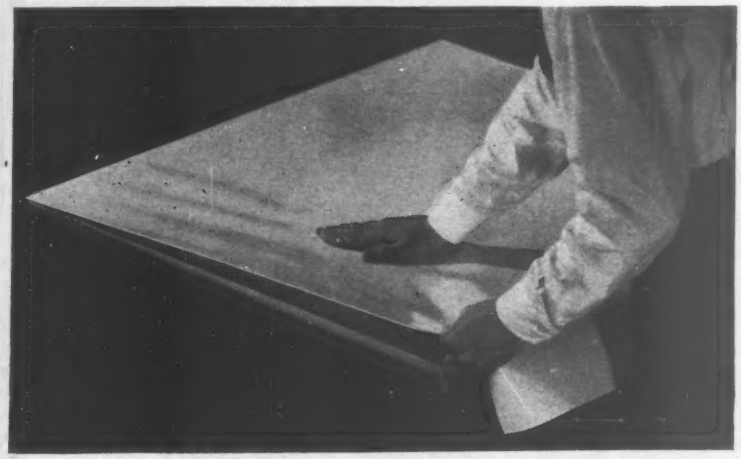

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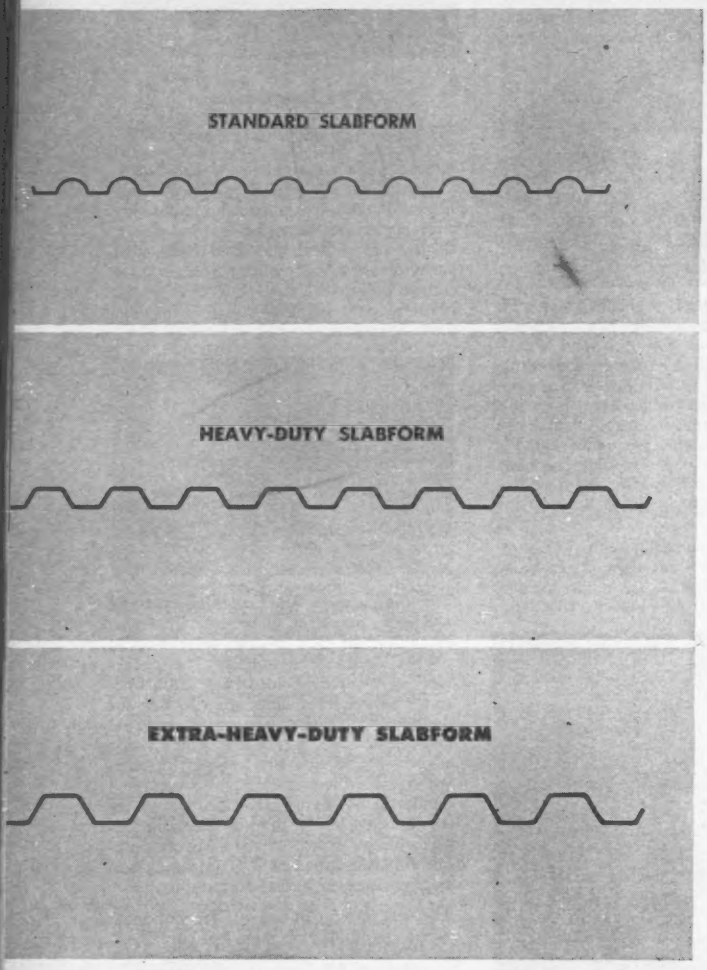


Bethlehem Slabform is a high-strength steel centering which speeds the pouring of concrete floor and roof slabs. It requires no blocking or bracing and, compared to flexible-type centerings, it saves concrete. The result: more economical concrete construction.

Three Weights Available

Slabform is furnished uncoated for structural cast-in-place slabs, or continuously galvanized for use as a permanent structural member for lightweight insulating concrete roof slabs or as an exposed form.

Made from steel having a yield point of about 90,000 psi, Slabform is made in three weights: Standard Slabform for spans normally up to 3 ft; Heavy-Duty Slabform for spans up to 5 ft; and Extra Heavy-Duty Slabform for spans up to 7 ft. The table below gives the physical properties.

Properties Per Foot of Width			
	Thickness In.	Moment of Inertia—In.^{4}	Section Modulus In.^{3}
Standard	0.0156	0.012	0.0333
Heavy-Duty	0.021	0.039	0.080
Extra Heavy-Duty	0.024	0.101	0.136

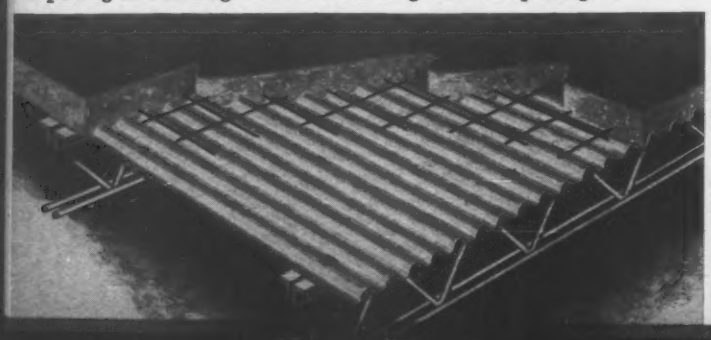
NOTE: Properties are computed in accordance with requirements of A.I.S.I. "Light Gage Cold-Formed Steel Design Manual."

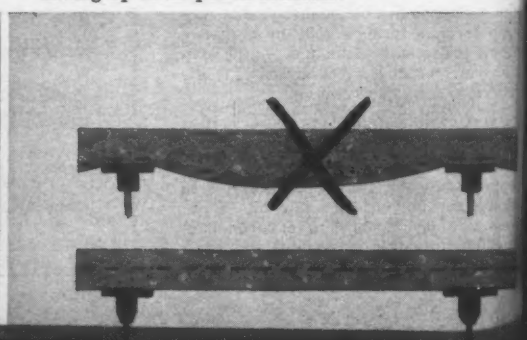
Shipping weights per square based on cover or laying widths:

Slabform Section	Black	Galvanized
Standard	79 lb	87 lb
Heavy-Duty	115 lb	126 lb
Extra Heavy-Duty	138 lb	150 lb

Slabform provides lateral restraint for supporting members and stiffens the complete assembly when it is in place and properly attached. No wooden blocking or bracing is required because there is no lateral pulling or straining of members during Slabform placing.

The solid form helps retain the moisture needed fo continuing hydration of concrete during the cu ing period, resulting in greater concrete strengt Rigid Slabform holds deflections to a minimun saving up to 20 pct in concrete.





Slabform Saves Time and Money

Rigid Bethlehem Slabform sheets hold deflections to a minimum under wet concrete and save up to 20 per cent of the concrete required when flexible types of centering are used.

Slabform can be used with lightweight insulating concrete roof fills at support spacings much greater than the economical use of flexible centerings will permit.

The nearest Bethlehem sales office will be glad to supply you with full details on Bethlehem Slabform. Design load capacities, suggested specifications and other data appear in our catalog in Sweet's Architectural File.

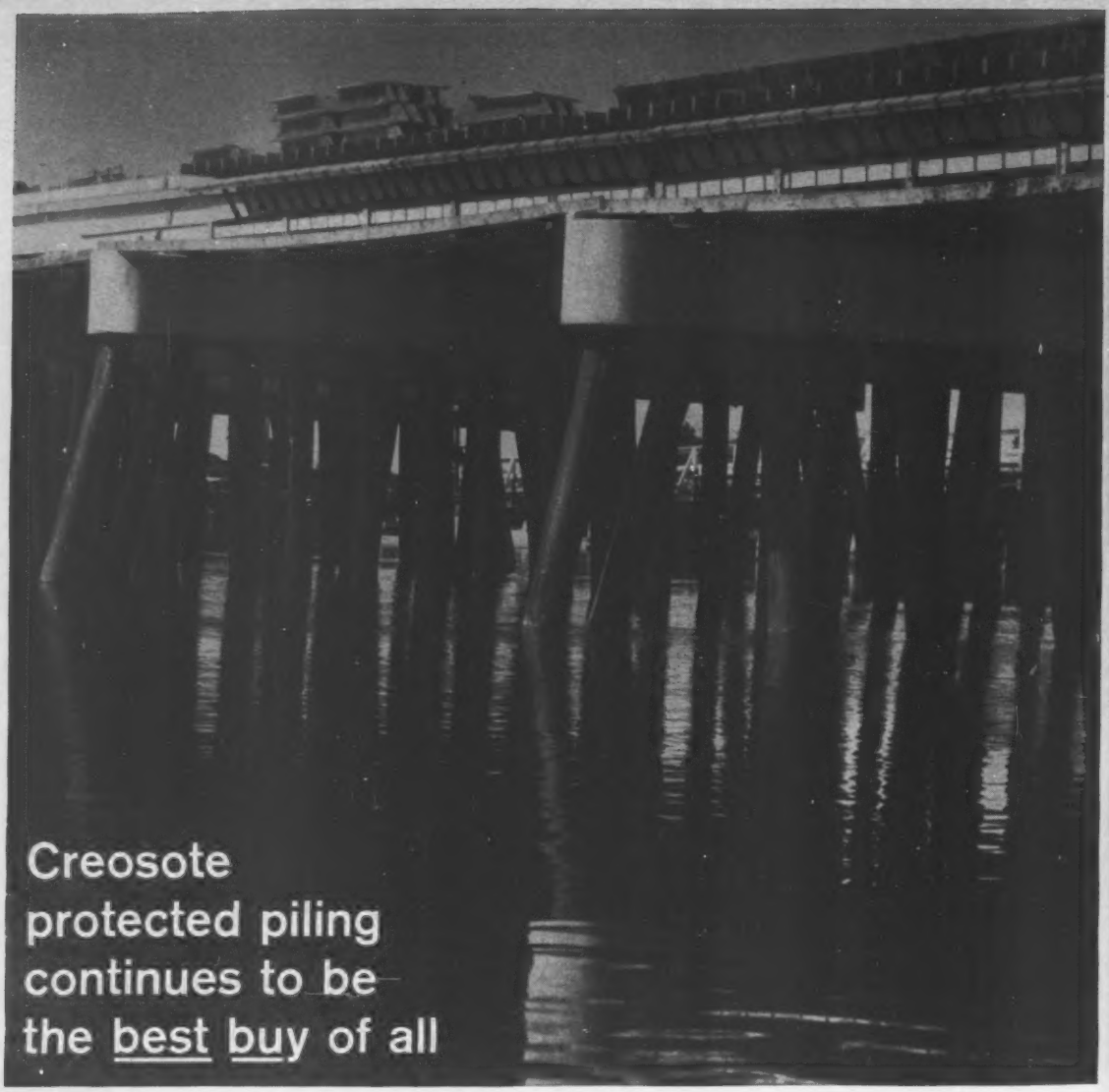
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributors, Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Because of the rigidity of Slabform sheets, the slab can be poured and finished in only one operation. Its appearance from below, after installation, is neat and clean.

Slabform is placed easily and quickly. When placed, it provides a solid, safe working platform for all trades. Slabform readily withstands normal construction abuse.



Nowadays with all the modern materials for bridge building, engineers are relying on the tried and tested support material—pressure creosoted piling—for bridges and similar structures. For example, the engineers of the modern Manahawkin Bay bridges in New Jersey specified pressure creosoted piling because of its dependable long-lived service.

Right now, with construction costs ever rising, road and bridge builders are doubly conscious of the long-run performance. Pressure creosoted timbers have remained strong and serviceable for 40 years and more! Whether it be bridges, culverts, poles or other road structures that require long-life protection, specify pressure creosoted lumber because of its:

MULTIPLE TOXICITY: Marine borers, fungi and wood destroying insects cannot develop immunity to the many toxic agents in creosote.

PENETRATION EASILY CHECKED: You can see the depth of penetration in any cross section.

THE ONLY TIME-PROVED PRESERVATIVE: Pressure creosoted wood has remained strong, without costly maintenance for generations.

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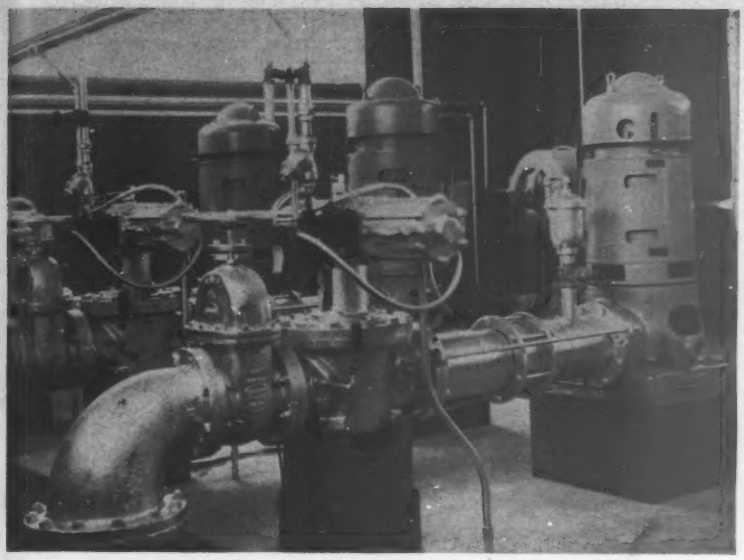
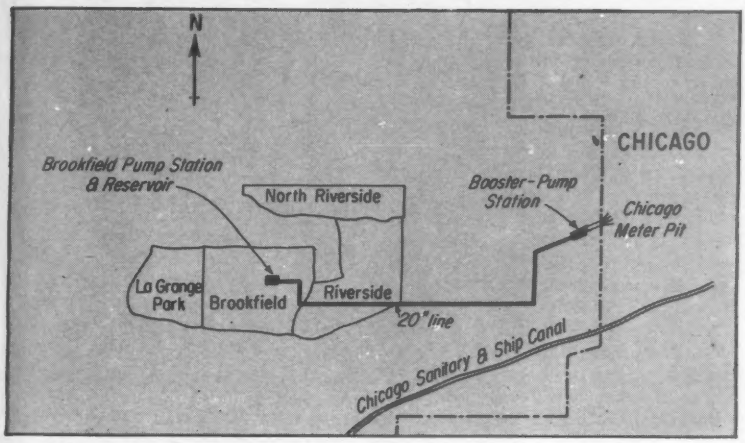


Boosters Double Pipe Capacity . . .



. . . Save High Cost of New Line

When suburbs outgrow existing water transmission lines, they have this choice: add another pipeline, or install booster pumping facilities to provide for the greater friction loss of head in the existing line.

That choice presented itself to the Brookfield-North Riverside Water Commission, which supplies water to four suburbs a few miles west of Chicago.

In the final analysis, a new booster pumping station offered a saving of nearly 250% on the annual charges of a new 20-in. transmission line.

As shown in the table of estimated costs (p. 52), the booster station and a receiving well would cost only $23,000 per year compared with $57,000 annually for the 35,000 ft of transmission line.

By John A. Fulkman of Consoer, Townsend & Associates, Chicago consulting engineers. Mr. Fulkman is a water supply engineer.

• **Serves 50,000**—The Commission is organized and operates as a political subdivision under the Illinois Statutes and supplies water to Brookfield and North Riverside. It also sells water to LaGrange Park and Riverside.

The combined population of the four villages supplied by the Commission is 50,000. Present water demands average 4 mgd. Maximum demand exceeds 6 mgd.

All water is sold at wholesale. The villages own and operate their own water distribution systems. Water at the Brookfield stations is delivered to Brookfield and North Riverside at distribution system pressure. Riverside and La Grange Park receive their water at ground surface reservoirs.

The commisison purchases the water at the west limits of Chicago. It owns and operates all water facilities from that point to the meters of its customers.

When the commission was formed about 20 years ago, it constructed a meter pit on Ogden Avenue housing two 12-in. meters. It also installed 35,000 ft of 20-in.-dia cement-asbestos transmission line with a design working pressure of 100 psi. A 1.5-million-gallon ground surface covered concrete reservoir and a pumping station were constructed in Brookfield at the terminus of the 35,000-ft transmission line.

Chicago furnishes water at the meter pit through a 24-in.-dia line, at pressures varying from 20 to 35 psi.

Under normal conditions of supply and pressure of Chicago's distribution system, the original transmission line supplied a maximum of about 4 mgd. On dry hot days, however, when the Chicago pressure was low, not over 3.5 mgd could be transmitted.

The elevation head between the Chicago meter pit and the Brookfield reservoir when full is 15 ft. Friction in the pipe line at 3.5 mgd is 33 ft, or a total head of 48 ft. This transmission line has a value of "C" = 140, in the Hazen-Williams Hydraulic Tables. Tests at various rates of flow confirming this very low friction loss are shown in an accompanying table.

• **More capacity needed**—About three years ago the maximum water demands increased to a point where more transmission line capacity was needed. This problem was solved for some time by constructing, and placing in operation in April 1957, a booster station and a 250,000-gallon ground surface concrete receiving well, or reservoir, at the meter pit in Ogden Ave, where Chicago water is received.

This receiving well and booster pumping station and accessories include an inlet connection on the existing 20-in. pipe line to the receiving well and booster pumping station, and a discharge connection from the pumps to the existing 20-in. line. There are also check and gate valves between these two pipe connections to the existing 20-in. line.

The booster station contains two pumping units each of 3,000-gal-per-min capacity at 120 ft total head. They are driven by 125 horsepower electric motors. The pumping units are of the vertical type, with the pumps submerged in the receiving well. Provision

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Off-Street Parking Garage, Post Office Square, Boston, Mass.

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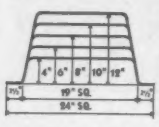
This all-concrete parking garage in Boston's Post Office Square utilizes GRID SYSTEM for maximum load-bearing strength at minimum cost. The GRID SYSTEM construction operations were completed in ten weeks, stressing GRID SYSTEM's time-saving economy.



Steel GRID domes are delivered to the job site in quantities large enough for any project. No charge is made for normal wear and tear, including necessary screw holes for sleeves, inserts, etc. All GRID domes have the same angle of pitch for uniform appearance.

*Among the buildings using GRID SYSTEM construction are: 110 William Street Building, New York City (31 story building); Billerica High School, Billerica, Mass.; Labor & Industry Building, Harrisburg, Pa.; Arnold Constable Store, Trenton, N. J.; Off-Street Parking Garage, Copley Square, Boston, Mass.; State Office Building & State Roads Building, Baltimore, Md.

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. . . Booster pumps operate on a part-time basis

is made for adding an additional similar pumping unit in the future.

The pumping station is automatically controlled from the Brookfield Station seven miles to the west. An altitude control valve on the inlet to the receiving well automatically controls the water level. Also cone check valves on the pump discharge lines limit the surge to a few pounds of excess pressure when stopping and starting the pumps.

The commission has under contract at the present time the construction of an additional pumping unit at the Brookfield Station to deliver water to La Grange Park. Also under construction is an additional 12-in. meter at the Ogden Avenue meter pit.

• **Part time pumping**—It is not necessary to operate this booster pumping station continuously. In fact, the booster pumps are not operated at certain times during the night and early morning during the summer season, and for much longer times in the off-peak seasons. When both pumping units are stopped, the water flows automatically through the pipe line from the Chicago meter pit to the Brookfield reservoirs.

• **Rates of delivery**—It is possible to operate at several different rates of delivery. With both booster pumping units operating, the delivery is 4,860 gpm or a rate of 7 mgd. (see table). With one booster pumping unit operating, the delivery is 3,400 gpm or 4.9 mgd. With no booster pumping units operating, the maximum delivery rate is usually from 2.5 to 3.5 mgd during daytime hours, and from 3 to 4 mgd at night.

Lower rates of delivery can be accomplished by throttling a gate valve at the Brookfield Station.

At the same time the new Ogden Avenue booster pumping station was placed in operation, in April 1957, a new 1.5 million gallon reservoir and additional pumping facilities were placed in operation at the Brookfield Station.

• **Capacity doubled**—The new Ogden Avenue booster pumping station doubled the carrying capacity existing transmission line, from 3.5 mgd to 7.0 mgd. It would have been possible to build an additional 20 in. dia transmission line to get the same result, but the additional line would have been much more expensive to construct, and higher in annual costs (see charts this page).

Booster pumping stations and water storage are often economical, and, at least, very desirable facilities for suburbs receiving water through large transmission lines from major cities like Chicago.

It is not always possible, however, to increase the capacity of a transmission water line by a booster pumping station. For example, when the additional pressure in the pipeline caused by booster pumping reaches the pressure for which the transmission pipeline was designed, the maximum limit has been reached.

Cost Comparison: Booster Station Vs 20-In. Line

Ogden Ave. Pumping Station (two 3,000 gpm pumps) and 250,000 gal receiving well:

Project Cost (Est.):	
Construction costs	$123,100
Land	8,100
Engineering, Inspection, Legal, etc.	18,000
Total	$150,000
Annual Cost (Est.):	
Interest and amortization of $150,000 bonds @6.4%:	$ 9,600
Electricity for pumping	8,400
Labor and maintenance	5,000
Total	$23,000

Additional 35,000 ft of 20-in. line:

Project Cost (Est.):	
Construction costs @ $20 per lin ft	$700,000
Engineering, Inspection, legal, etc.	$100,000
Total	$800,000
Annual Cost (Est.):	
Interest and amortization of $800,000 bonds @ 6.4%	$ 51,200
Labor and maintenance	5,800
Total	$ 57,000

Friction Losses In 20 In. Line

Quantities:		EL of hydraulic gradient (ft)		Ft of friction less in 35,000-ft line:	Value of "C" in Hazen-Williams tables:
Gal per minute (gpm)	Million gal per day (mgd)	Ogden Ave. Pump. Sta.	Brookfield Reservoir		
4,860	7.00	763	643	120	140
3,400	4.90	698	636	62	140
2,430	3.50	658	625	33	140
*5,840	8.40	793	625	168	140

*Based on future addition of a duplicate pumping unit at the booster station.

SCALING THE ROOF of Chicago's 79th Street water tunnel... prior to setting 6" H crown arch ribs. During the construction of the $7,852,000 tunnel, over 250,000 cubic yards of limestone are being burn cut, blasted and mucked from headings 164 feet below the surface. Over 4,700 feet of unstable ground requires reinforcement to prevent cave-ins... a situation further aggravated by the daily problem of pumping 1.3 million gallons of water. Despite these conditions, tunneling—including erection of support steel—progresses at a rate of 30 feet per 24 hours.

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NEARLY A MILE of the 15 ft. 1 in. x 16 ft. horseshoe tunnel roof and walls are supported by COMMERCIAL arch ribs carried on double 8" I continuous wall beams supported by 6" H posts. Channel lagging bolted to the outside flange of the arch ribs serves as intermediate support between ribs. Threaded rods tie the ribs and posts on 4 ft. centers. All members are custom formed to fit the job and assembly into a unit structure. This is the COMMERCIAL tunnel support system.

For more complete details on how COMMERCIAL steel liner plate can simplify and speed up your vertical shaft, surface or sub-surface tunnel project—help make it safer—send today for your copy of Catalog 300-C1. Address: Commercial Shearing & Stamping Company, Dept. E-34 Youngstown 1, Ohio.

OUR BEST BUY—"For over 25 years we have used COMMERCIAL tunnel supports. They have given us a perfect safety record," says W. A. LaVine, Assistant Project Engineer for S. A. Healy Company, the contractor. "We rely," he added, "on the broad experience offered by COMMERCIAL's engineers to aid us in the final choice of the proper weight and design of the members in tunnel support systems we erect—get a custom job on each project. On the basis of proven performance, experienced consultation service and just plain dollars-and-cents logic, our best source of supply for tunnel supports is COMMERCIAL SHEARING."

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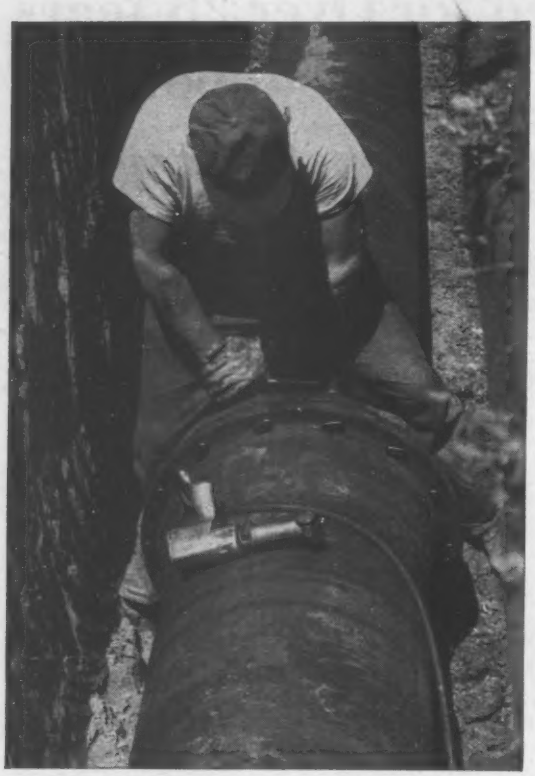
With hundreds of engineers voting –

IT'S CAST IRON PIPE BY A

A country-wide survey of consulting engineers, just completed, asked this question: *What kind of pipe do you prefer for water distribution, and why?* Of the answers received, by far the greatest number named cast iron! Here are typical comments:



"Our experience in the use of pressure pipe in the installation of water mains servicing communities has been limited entirely to cast iron. We have used nothing but cast iron all the way from 4" to 24" in diameter and have never regretted having done so."

—Texas

"Longer length of life—comparative ease of installation—agrees with codes more readily."

—Ohio

"This is known to be of 100-year life, and is the preference of this office when cost over this period can be used."

—Florida

LANDSLIDE!

"Long life, relatively inert material, flexibility of applications, and readily handled by maintenance crews of most owners."

—Alabama

"Durability, ease of taps, strength where installation conditions are not ideal."

—New York

So many good reasons . .

- LONG LIFE. The cast iron pipe you install today will be performing economically a hundred years from now.
- HIGH CAPACITY FLOW. Cement-lined cast iron pipe will deliver the full-rated flow all through the years. No other pipe, size for size, can carry more water.
- CORROSION RESISTANCE. Long life proves it. Most water utilities are still using the first cast iron pipe they installed.
- GREAT BEAM STRENGTH. Cast iron pipe resists the effect of heavy traffic, shifting soils.
- TREMENDOUS LOAD RESISTANCE. 6″ cast iron pipe (Class 150) withstands a load of nearly 9 tons per foot!
- PRESSURE-TIGHT JOINTS. You have a complete choice of leakproof, easy-to-assemble joints. You need a minimum of tools and work crew.
- EASE OF TAPPING. No tapping saddles needed. Takes threading best of all kinds of pipe.

. . . good reasons for you to choose

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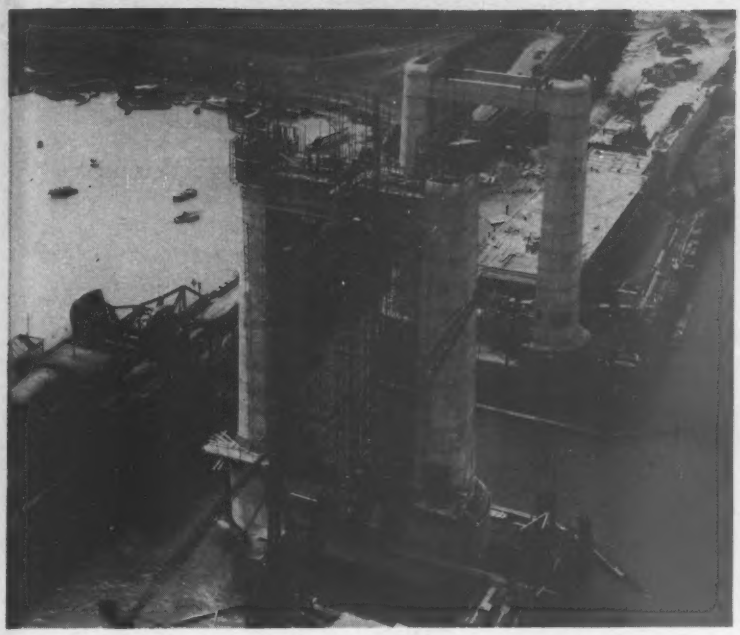

Kent Gets a Big Lift Bridge

Towers for the $2.8-million Kingsferry Bridge over the River Swale recently took on their last skip of concrete. The crossing, which links the Isle of Sheppey with the mainland of Kent, England, will open to traffic this fall.

It is the largest lift bridge to be built in England since World War II.

The bridge will be 650 ft. long. Its 50-ft width will carry a railway track, a 24-ft roadway and a 6-ft footpath. The 100-ft-high concrete towers at the center will raise the middle span 95 ft above the high water mark.

The contractors, John Howard & Co., Ltd., began work on the site in December, 1957. Mott, Hay & Anderson designed the structure.

Baubles and Bomb Shelters

A luxury village is being built for East Germany's 20 top communists about 20 miles from the center of Berlin. Cost of the colony is estimated at nearly $250 million, according to Radio Free Europe.

Each 12-room villa will be prefabricated, but interiors will be equipped according to the individual whims of their tenants:

- Prime Minister Otto Grotewohl wants expensive African wood for his study and Italian marble in the bathroom.
- Minister of Justice Hilde Benjamin will have an ebony-paneled music room.
- First Party Secretary Walter Ulbricht needs genuine Venetian glass overlaid with gold leaf for his dining room.

A purchasing committee is reportedly touring both Western and Eastern Europe buying up antique furniture, tapestries and expensive knick-knacks.

The development will include a $1.5-million "House of Culture" containing such essentials as a full-size theatre, ball room, guest rooms and living rooms, swimming pool, three barber shops, massage salons, doctors' offices, several tennis courts, a state-subsidized shopping center and a gambling hall.

All buildings and homes are being built in a 130-acre "main zone" surrounded by a 7-ft-high concrete wall. Around it all there's a 50-acre belt, or "protective zone," with 68 apartment units and barracks for guards and service staffs.

The project also includes an extensive underground shelter system. The report ends with the cryptic comment, "the colony streets will be 20 ft wide and solid enough to carry Soviet tanks in case of emergency."

(*International continued* p. 58)

NF

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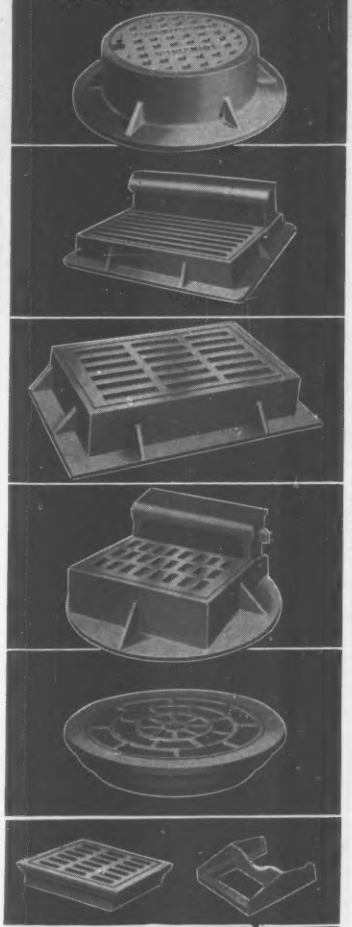

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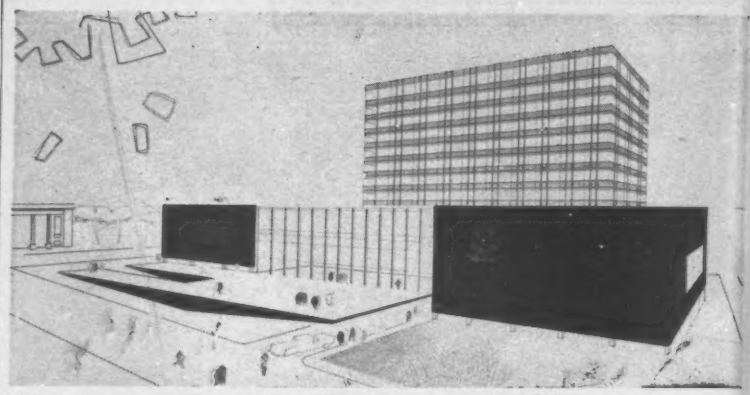


This design by a 27-year-old architect won over 300 others.

Brazil Selects a Capitol Design

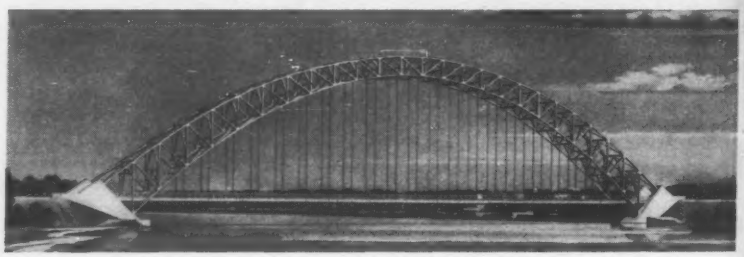
Competing in a 300-architect field, Gregorio Zolko, a 27-year-old graduate of the University of Illinois School of Architecture, has won the competition to design a new state capitol for Rio Grande do Sul, Brazil's southernmost state.

Zolko, a native of Sao Paulo, Brazil, headed a team that included Wolfgang Schoeden, a German architect, and Horst Radius, a structural engineer. The first prize amounts to $5,000 plus charge of the project.

The building will consist of a 12-story central office block flanked by an auditorium on the left and legislative chamber on the right. Both of these units will rise five floors above ground level.

The air-conditioned, steel frame structure will contain 186,000 sq ft of floor area. Preliminary estimates place the cost at $4 million.

Site clearing is under way on a high point of land overlooking Porto Alegre, the state capital. A construction date will be set later when detailed drawings are completed.



Trussed Arch Will Span Indus

The Government of Pakistan will call for world-wide bids on September 18 for construction of a steel truss arch railroad bridge over the Rohn Channel of the Indus River near Sukkur.

The bridge will have a span of 806 ft, 9 in. between end pins. The rise of the bottom rib will be 180 ft and the distance between the two ribs at the crown will be 24 ft.

It will be the ninth longest steel arch in the world, according to its designer, D. B. Steinman, New York City consulting engineer.

Mr. Steinman estimates that the bridge will cost $3 million and take 20 months to erect. It will be paid for from funds allocated by the International Bank for Reconstruction and Development for the rehabilitation of Pakistan's railroad system.

Although designed as a railroad bridge, the new Rorhi Channel span will have a concrete deck, flush with the rails, that can carry motor traffic in time of emergency. Specifications call for the use of British Standard steel.

The new bridge will be erected 100 ft downstream from the 70-year-old Lansdowne Bridge and replace it for railway traffic.

(*International continued p. 60*)

another example of **INGALLS SKILL**
in fabrication and erection of Structural Steel

Ingalls Facilities Help Complete Another Bridge Faster

The new bridge over the Tennessee River at Decatur is a striking example of the versatility of Ingalls . . . of how, when a builder is seeking one company to handle all phases connected with the steel in a project, Ingalls is able to offer the complete services required.

For, not only did The Ingalls Iron Works and Steel Construction companies work together on the project in the fabrication and erection, but the Decatur yard of The Ingalls Shipbuilding Corporation assisted in the bridge construction. Girders for the approach spans were fabricated in Birmingham, shipped and unloaded in Ingalls Decatur shipyard, the girders were spliced, loaded on barges, and transported to the bridge site.

Designer and Engineer: Highway Department of Alabama
Contractors: Blount Brothers Construction Company
Tonnage: 2,185 tons

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SAUERMAN NEWS briefs

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DragScraper Uses Island for Parking Lot Fill

An island in the Kalamazoo River was used for parking lot fill by the Harrington Construction Co. of Fennville, Michigan. The job was handled by a Sauerman 3-yd. Crescent DragScraper and carrier assembly used with an Insley WB crane.

The hoisting line of the Insley served as track cable, running from the hoist drum through the middle sheave of the boom tip to a tree anchor on the island. The drag cable was attached to the front chains of the Crescent.

After digging and hauling to bank, the track cable was tensioned to lift the DragScraper and gravity return it to the excavation over 400 ft. away. Round trip took about a minute and a half. The 70-ft. crane boom was supported by two back stay cables leading from the boom tip to two tractors used as anchors.

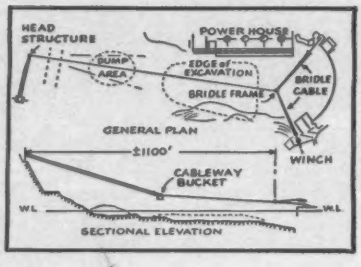
(Condensed from Sauerman News No. 149.)

High Bank Digging

DragScraper works on face of 175-ft. bank, hauls load 600 ft. Rapid Shifting Tail Bridle changes line of operation.

(Condensed from Sauerman News No. 150.)

De-Rocking a Tailrace

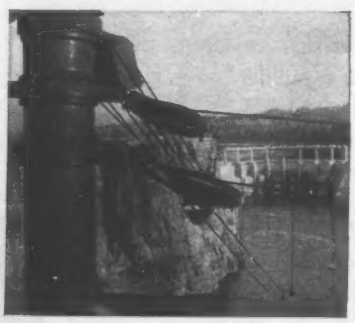


When the Washington Power Co. completed its Cabinet Gorge power plant and dam, an accumulation of rock at the discharge of the draft tubes had to be removed to insure unobstructed flow for the tailrace.

A Sauerman 2½-yd. Slackline Cableway, equipped with a rapid-shifting bridle system, was selected to do the job. Over 28,000 cu.yds. of rock varying in size from 6 in. to 5 ft. have been removed since the Slackline was installed. It is a permanent installation and is used periodically to clear the area in front of the draft tubes.

The Slackline operates on a 1000-ft. span. Material is excavated from 35 ft. of water and conveyed in the 2½-yd. bucket to a waste pile about 150 ft. below the tubular steel head mast. Power is supplied by a hoist located 190 ft. from the mast. The bucket and carrier assembly rides on a track cable, the lower end of which is attached to a rapid-shifting bridle frame controlled by a 10-hp. motorized spool-type winch. The rapid-shifting device permits the bucket's line of operation to be shifted laterally.

(Condensed from Sauerman News No. 143.)



MORE NEWS AND INFORMATION

Issues of Sauerman News giving greater detail about the installations on this page are available on request. For full information, tell us your interest or requirements and ask for catalog. Contact Sauerman Bros., Inc., 632 S. 28th Ave., Bellwood, Ill.

. . . International

El Salvador Will Rebuild Airport for Jet Traffic

El Salvador will spend some $6 million in modernizing San Salvador's Ilopango International Airport for jet aircraft.

The enlargement will take two years and include the construction of tunnels so that the expanded airport will not interfere with traffic on the nearby highway and railroad. The airport is the only one in the country that can accommodate international passenger and freight planes. It will remain in use while the new work is carried out.

A representative of the El Salvadorian government will negotiate with the Export-Import Bank for a loan to finance the project.

More High-Building Work Scheduled in London

A 15-story combination office and hotel building will go up in London near Oxford Circus.

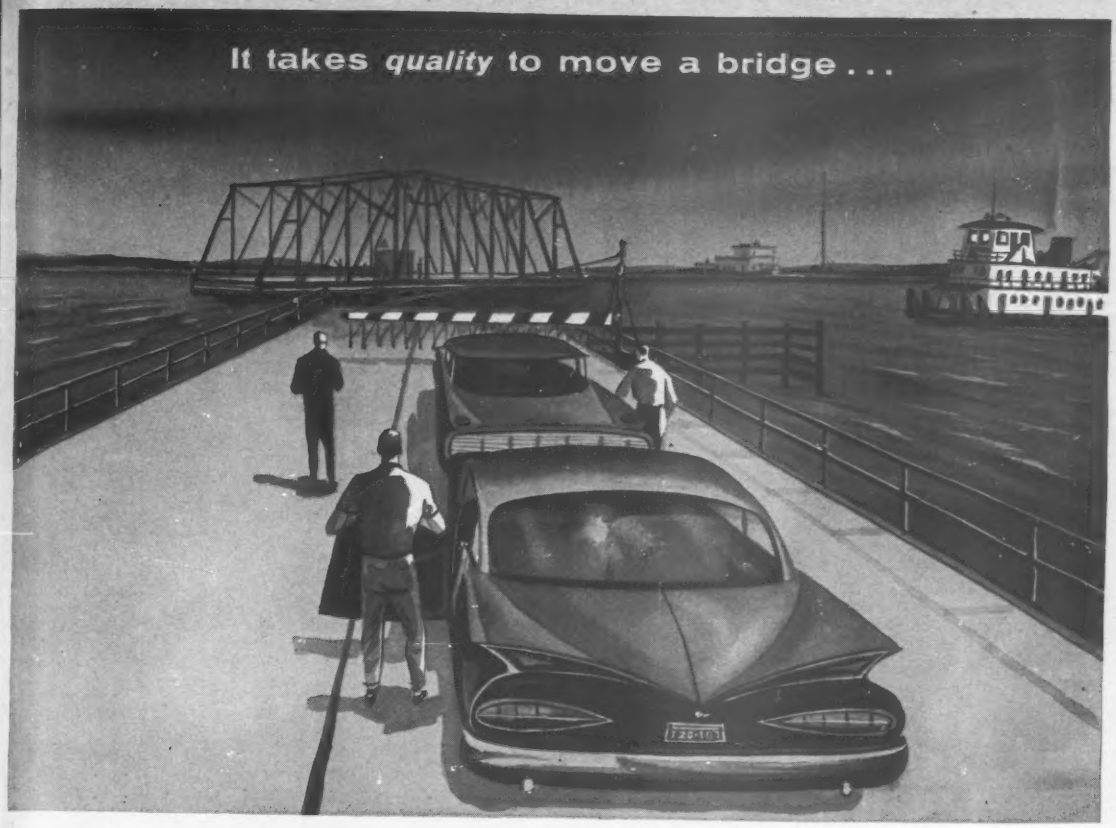
The project includes a 15-story tower building with a connected six-story wing. The hotel will occupy the top four or five floors of the tower. Architects for the development are Sir John Burnett, Tait, Wilson & Partners. John Laing and Son, Ltd., will be the general contractor.

This is the third major high-rise project for London within a year. Others under way or in the planning stages are the headquarters for Shell Petroleum Co., Ltd., on the Thames River (ENR, June 18, p. 60) and the Picadilly Circus project (ENR Mar. 19, p. 39).

Indus River Plan Backed By India and Pakistan

The long standing dispute between India and Pakistan over the distribution of the waters of the Indus River is nearer solution. The disputants have accepted the basic points of a plan presented by the International Bank for Reconstruction and Development to settle the dispute. They will now resume discussions to work out the details of a treaty. The use of the Indus waters has been a sore point in the relations between the two nations for 11 years (ENR April 30, p. 22).

Under the plan India has agreed to the amount it would pay Pakistan for development of sources to replace water drawn from the river by India. India also agreed to a 10-year transition period to allow Pakistan to develop the new sources. Previously, the transition period was to end in 1962.



SERVICE FOUNDRY

Bridge machinery requires top quality workmanship. Yes, *quality* is what counts, and Service Foundry has it! For general bridge construction . . . expansion rockers, bearing plates and miscellaneous castings—for bascule, lift, and swing bridges . . . heavy gear operating machinery. Service Foundry can supply large cast steel gears to your design and specifications —plain or alloy—to 15 ft. diameter and 30 in. face with cut or cast teeth. Bull or swing gears of segmental design with cut or cast teeth can be made to very large diameters.

Write NOW for our complete brochure, *Foundry Work—Steels, Alloys & Non-Ferrous*

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MARINE WAYS, INC.

VERSATILE BUILDER ON THE MISSISSIPPI

416 ERATO ST. • JAckson 2-3836 • NEW ORLEANS 13, U. S. A.

TRENCHING THROUGH QUICKSAND

Orfei & Mariani and Sons, Inc., St. Paul general contractors, encountered excessive water and quicksand on a sewer job. They put their American 700 Series Dragline—with 2½-yd. bucket—on the job . . . trenched down 50 ft. while dewatering the area. Then, working through a cassion, the American clamshelled to grade—added a gravel support base and set the 48″ pipe. "We're very satisfied with our Americans," says Geno Orfei. "A real machine—best brakes I've seen," says operator John Schadow. Americans prove their performance and efficiency on tough excavation and construction jobs . . . capacities start at ½-yd., 12½ tons!

PERFECT CONTROL of the American 300 Series Cranes keeps heavy material moving fast . . . jobs on schedule! American Crawler and Truck Cranes accommodate all fronts —provide the right capacity for your job. Get all the facts on a complete crane-excavator line from your nearby American distributor—he's on call!

Orfei & Mariani used an American 100 Series Truck Crane to jet in the well points required to dewater the area. Low boom operation permits long reach. Operator Robert Cofield says the American, "... handles real nice —very easy to operate." American simplicity gives owners high production with low initial and upkeep costs.

EXCAVATORS-CRANES
to 2 yds.-55 tons
LOCOMOTIVE CRANES
to 130 tons
DERRICKS-HOISTS
to 800 tons
REVOLVER CRANES
to 400 tons

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

AMERICAN HOIST
PACIFIC COMPANY
Special materials
handling equipment

CROSBY-LAUGHLIN
DIVISION
Drop forged fittings
for wire rope-chain

Loose dirt holds unrolled seeded blanket on highway center strip

After a month, grass had grown through from four to six inches high

Seeded Blanket Starts Grass Growing

Seeded blankets have been used successfully to grow grass on highway areas where ordinary planting methods failed.

A test program on this method of planting was undertaken at the Engineering Experiment Station of the University of New Hampshire in cooperation with the New Hampshire Department of Public Works and Highways, Troy Blanket Mills of Troy, N. H., producer of the blankets, and horticulturist W. J. Anderson, originator of the seeded blanket.

By **George M. Batchelder and Lawrance W. Webber** of the University of New Hampshire's Engineering Experiment Station. Mr. Batchelder is Research Professor at the station and Mr. Webber is Research Associate Professor and Associate Director.

The blankets used were one of the first experimental types produced by Troy under the trade name "Troyturf."

It consisted of a four-ounce jute with a bottom layer of muslin, containing seed, fertilizer ph control, vermiculite, grub control agents and organic mulch, which would provide a uniform distribution of 3½ tons per acre.

Placing the blankets was simpler than any standard method now in use. First, a cut was made in the under soil, which had been finished roughly by hand shovels. One end of the seeded blanket was placed in the cut and covered with sand and gravel to hold it. The blanket was then rolled out from the tied-down end and cut to the desired length. This end was held by sand and gravel; edges were held with adjacent material.

When laid side by side the blankets were overlapped a few inches and held in place by near-by material.

No regular seeding of the ground, or overseeding of the mat, was necessary.

Four test situations were used. Locations 1 and 2 were chosen because of water and gullying conditions so severe that ordinary seeding would have been impossible. Blankets were laid in drainage ditches at the toe of a slope, through which water flowed continuously.

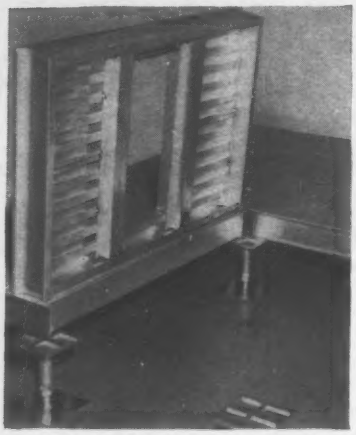
Locations 3 and 4 were chosen to determine variation in germination and growth rate with and without loam. Location 3 was shaped with a grader and covered with one inch of loam; Location 4 was hand shaped and not loamed.

Blankets were laid on August 7, 1958.

WACO ® New Design

Raised Floors Give Perfect Performance

Reinforced panels eliminate stringers, permit total access!



WACO "Series 300" raised floors feature reinforced aluminum panels with stringer-free installation to permit total access to subfloor and to allow cut-outs anywhere on the panel, even after installation, while retaining maximum strength, minimum deflection. Adjustable pedestals assure perfectly level floor.

WRITE FOR FREE CATALOG

WASHINGTON ALUMINUM

Company, Inc. • Dept. 3181

Baltimore 29, Maryland

. . . Seeded blankets grow grass in tough spots

The first inspection was made 12 days later:

"Location 1": Edges were showing start of growth, though the center of the blanket was covered with running water and there was no visible growth there. Considerable sand and gravel had washed onto the blanket, but average height of the grass was about half an inch.

"Location 2": Growth was visible along the edges and in the area not washed by running water. Sand and gravel had washed onto the blanket but fibers of the mat were still visible and holding in place well. Average grass height was half an inch.

"Location 3": General appearance of growth was good. There was some washing of sand onto the blanket from the edges and center of upper end. Grass average was half an inch.

"Location 4": A small area of this unloamed spot showed good germination. Again there was sand washed onto the blanket along the edges. Grass height was less than half an inch.

The inspection of September 9th showed the following:

"Location 1": All traces of the blanket had disappeared so completely that pilferage was suspected.

"Location 2": The blanket was still securely in place, but washed through. Flow of water had caused considerable gullying under it. Silt and sand covered most of the blanket, but the grass growing had a height of about three inches.

"Location 3": Grass was growing well with the blanket area fairly well filled in. Edges showed washing of sand onto it, and the center area was covered with about two inches of sand. Nevertheless, the grass continued to grow through, with a height of from four to six inches.

"Location 4": The condition of this area was generally poor, with considerable sand covering the blanket. The grass was about three inches high.

The inspection at the end of the growing season, on October 14, 1958, showed:

"Location 2": Water was running continuously in the center of the blanket, and no grass was growing there. In other areas, despite the sand that had washed on, grass was five inches high.

"Location 3": There was good growth in the center of the area, apparently as a result of washing of the seed towards the center. Despite washed sand, which definitely inhibited the growth, grass height on the edges was two to three inches, and in the center about six inches.

"Location 4": One area of the blanket showed good growth, and while the seeds had washed out of much of it, the vermiculite and filler were still present.

The final inspection, made in April of this year, showed a well developed root system in all the areas where grass was growing, but it was too early to determine the damage caused by the severe winter.

Officials of Troy Blanket Mills stress that the initial blankets used in these tests were strictly experimental units, and that since that time a considerable body of knowledge has been built up, including data on the proper blanket formula to use for quick grass growth in various conditions.

In addition, newly developed production methods now permit a much superior seed distribution, and also permit needling of the blankets so that the seeds can be held firmly in place until they germinate, even in moving water.

Because of the encouraging results of the initial series of tests, the Engineering Experiment Station is now planing additional tests. A variety of seeds will be tried in chosen locations, with different watering techniques, types of soil, and methods of blanket placement.

Chinese Produce Cement With a Different Recipe

A Rumanian technical magazine, TEHNIKA NOUA, reports that Red China is producing high-quality hydraulic cement by using nepheline, furnace slag, calcium hydroxide and anhydrite.

Key to the process seems to be the nepheline, which Red China reportedly is producing as a byproduct in the manufacture of aluminum. Nepheline apparently is used for aluminum production instead of bauxite.

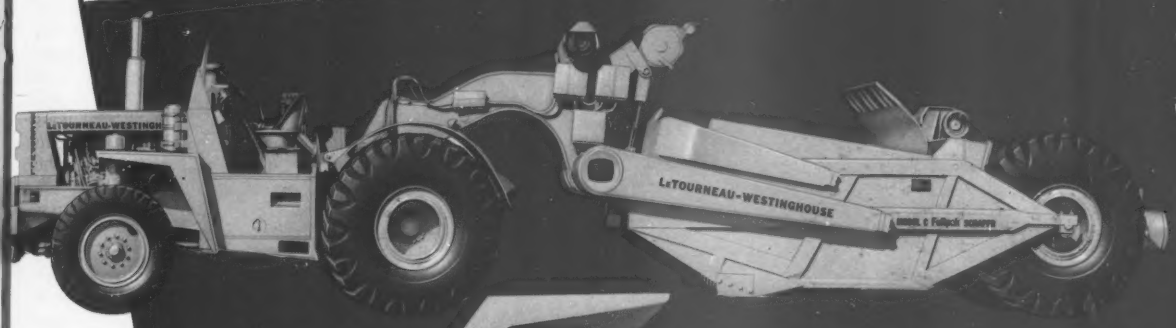
The cement is nearly half nepheline. The rest of the formula breaks down into 33% granulated furnace slag, 2 to 3% slacked lime and 14 to 16% anhydrite, formed by burning gypsum. The compound is mixed wet, dried, then finely ground into the cement powder.

Study Seeks to Raise Equipment Productivity

The Ohio Contractors Association is planning a study of construction methods and practices on highway and bridge work to find ways the contractor can utilize his equipment over a longer construction season, thus speeding work and cutting costs.

Emmett H. Karrer, professor of highway engineering at Ohio State University's College of Engineering will direct the study.

LW PARADE OF PROGRESS

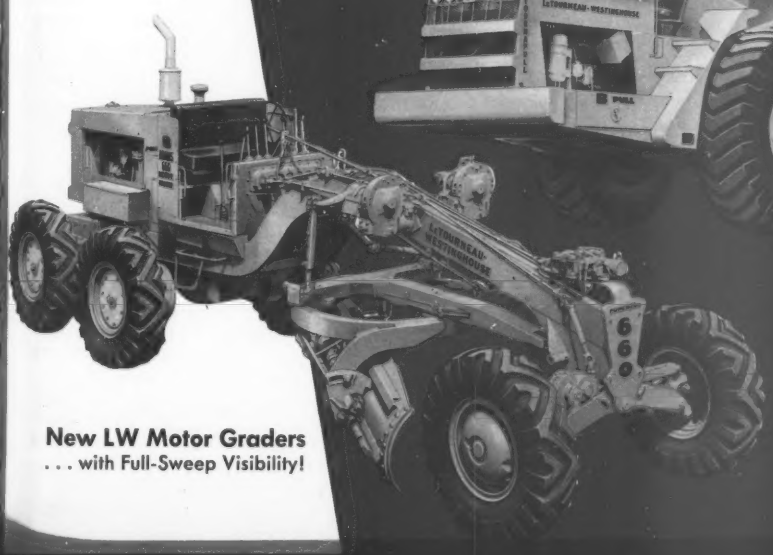


Speedpull* . . . New 6-Wheel Scraper with Tournapull Quality!

Haulpak® . . . First All-New Truck in a Quarter-Century!

From LeTourneau-Westinghouse . . .

NEW TOOLS TO BOOST PRODUCTION ...CUT YOUR COSTS



New LW Motor Graders
. . . with Full-Sweep Visibility!

Bigger-Powered Tournapulls®
. . . 360-hp Turbo-charged "B" . . . 270-hp V-Power "C"!

These are new milestones in LW's Parade of Progress . . . where earthmoving know-how, engineering skill, and long production experience combine to give you highest-output equipment at lowest cost.

PARADE OF PROGRESS

For top production on long-haul jobs

NEW 6-WHEEL SPEEDPULL

276 hp . . . 20 yd heaped . . . 37.7 mph

Now . . . a profit-partner to 4-wheel Tournapulls . . . a *six*-wheel self-propelled scraper for long-haul assignments. New LeTourneau-Westinghouse C Speedpull moves more dirt *farther* in less time . . . *for less money* . . . and more profit than any other six-wheel tractor-scraper in its class. Here are some reasons why:

• *HYDRAIR* SUSPENSION:* Rides on air! . . . piston-cylinder mounting of front wheels provides high ground clearance, avoids axle "dozing," permits fast, short turns.

• *BEST POWER-WEIGHT RATIO:* Only 336 lb loaded weight per hp! Step-gear transmission, 10 forward speeds, 2 reverse.

• *FEATHER-TOUCH POWER STEER:* Precision control with minimum effort. Completely shockproofed linkage. 41'2" Speedpull can turn 180° in space only 34' wide.

• *SPOT-TURN BRAKES:* For "skid" steering in unusually soft going. Hand-lever on steering post brakes either drive-wheel for sharp, sure turns.

• *WORLD-FAMOUS FULLPAK® SCRAPER:* Easiest-loading scraper in any material. Low, wide, for fast dirt entry, less "lift." Curved tailgate improves "boiling" action, reduces voids.

• *ELECTRIC-CONTROL SYSTEM:* For fast response, easy operation, low-cost maintenance. Fingertip switches actuate point-of-action motors that reach full speed in 1/5 second.

• *POWER-TRANSFER DIFFERENTIAL:* Keeps production up when working in mud, on hills, curves. Transfers power from slipping drive-wheel to wheel on firmest footing.

• *EASIEST MAINTENANCE:* Strongest frame; quickest access to components; only ONE lube point on prime-mover needs daily service. For safety: 3,764 sq in. of air-actuated, multiple-disc brake surface, biggest in industry.

*Trademark

Note easy-loading features on Model 27 Haulpak as it gets heaping load of overburden in this quarry.

Check these HAULPAK advantages:

- Hauls up to 30% more than its own weight.
- Has no springs, because Haulpak rides on Hydrair (exclusive LW air-hydraulic suspension system).
- U-turns non-stop in far less space than ordinary trucks.
- V-shaped body provides bonus yardage within short wheelbase . . . lowers center of gravity for better stability.
- Powerful, twin 3-stage hoists lift body in seconds to 70° angle for fast ejection of load.
- Just 4 grease fittings, with lube checks needed only at 500-hr intervals, for low-cost maintenance.

Maximum tonnage at lowest-net-cost-per-load

Haulpak off-road truck

Three sizes: 22, 27 and 32-ton capacity

Now... LW Haulpak, first all-new off-road truck in a quarter-century... developed, after more than 3 years of research and field test, to give you highest output at lowest ownership-operating costs.

Although brand new, Haulpak is a fully tried and tested machine... working under toughest conditions through all seasons — in mines, quarries, and on construction jobs. Its various parts and assemblies — some of them proved by *millions of hours* on LW Tournapulls all over the world — are much stronger than those on ordinary haulers. With the new LW Haulpak you can be confident your truck maintenance, repair, and operating costs will drop to a new low... and your hauling tonnage will climb to new highs!

Biggest Haulpak of all the LW-80 with 100-yd capacity!

Designed for use as an 80-ton coal-hauler, this big 450-hp bottom-dump unit can hit 40 mph!

NEW MODELS

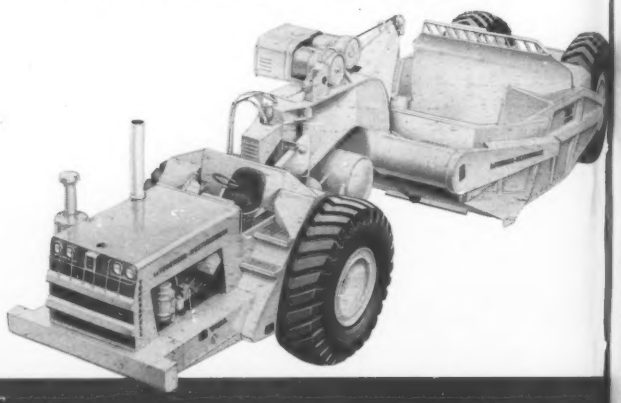
New Full-Sweep Visibility LW Graders

Your operator can see the road ahead as well as both ends of the blade! New, big 63" circle for positive blade control! Quick blade-tilt adjustment! New 6-cylinder engines available for 3 models! And more strength has been built-in where strength is important! Still standard are: *Continuous-welded* one-piece frame, with distinctive arch for higher blade clearance. *Full-floating* rear axle. Choice of GM or Cummins engines (mounted on rubber). 100% *friction-free* drive train. Easiest-operating controls. Two torque-converter, four "straight-stick" models, with 8 forward speeds, 4 reverse, 3 creepers!

Higher Horsepower Tournapulls

360-hp Turbocharged "B" . . . 270-hp V-Power "C"

New power . . . to speed acceleration, cut haul times, lick tougher grades, get bigger loads *faster*. B 'Pull* now offers *turbocharged* 360-hp GM engine, New "C" gives you V-Power, with 270-hp GM 8V-71 engine. V-Power C 'Pull has the BEST power-to-weight ratio in the medium-sized scraper field! Standard on both machines: easy-loading Fullpak scrapers . . . a big 28-yd model on the "B", a new 20-yd unit for the "C"! 335-hp "B", 226-hp "C", and 143-hp "D" also available.



Ask your LW Distributor for details on these other cost-cutting LW machines

9-yd D Tournapull, handiest scraper made! 218-hp rubber-tired Tournatractor®, that travels anywhere, at speeds to 17 mph. Twin-C* Pusher, combining 436 hp, 40 tons weight, and 20-mph speed. Rear-Dumps: 11, 22, 35-ton capacities. Also Sheep's Foot Rollers . . . Drawn Scrapers . . . Bottom and Side-Dumps . . . and Tournarope®.

Your nearby LW Distributor is ready, willing, and completely able to help you in many ways. In addition to LeTourneau-Westinghouse equipment, he handles other lines of quality earthmoving tools. He is in a position to give you honest appraisal of trade-in-equipment, and will assist you in obtaining helpful financing when it is needed.

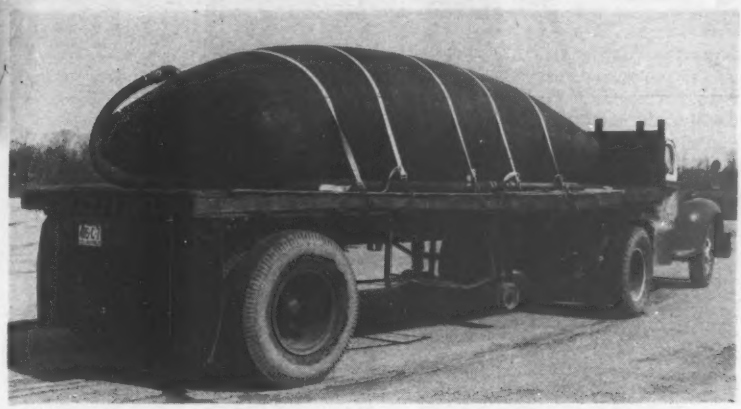
See your LW Distributor, too, for *dependable* repair service. You will be pleased with his prompt and efficient attention to your needs.

And even if you're NOT in the market for equipment or service, make your LW man *work for you!* Remember, every LW Distributor is a man of long experience in earthmoving. Call on that experience . . . whether in planning a job, figuring a bid, or *any* problem where more "know-how" will help!

LeTOURNEAU-WESTINGHOUSE COMPANY
PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company
Where quality is a habit

Litho in U.S.A.

*Trademark LA-2143-DC-4



Carry Bulk Liquids in a Pillow

. . . Or in a Rubber Tire Tanker

The moving and storage of bulk liquids such as water and petroleum have been simplified by an expanded line of collapsible pillow tanks and by the availability for private use of rubber tire "Rolli-tankers."

The pillow tanks are containers made of one or two plies of synthetic rubber-coated nylon. They are not new. They were developed after World War II and have been extensively used by the military. Recently, however, their many advantages have resulted in an increased demand by private firms—contractors included.

Because of the demand, the manufacturer, Goodyear Tire & Rubber Co., has upped the number of tank sizes available. It is now possible to get the tanks in sizes of up to 200,000-gal capacity.

These are the advantages that have attracted contractors:

• **They are compact.** When not in use, they can be rolled up like a rug into a small bundle for easy storage and handling. If they are being carried empty to a job, their small size reduces the size of truck needed; on a trailer there is room for additional pay load.

• **They are light.** A 10,000-gal unit when full is 42 ft long, 12 ft wide. Empty, it weighs only 580 lb. It can be loaded for transport by manpower or by a small hoist. At the site it can easily be rolled off a truck and unrolled for use by a small crew.

• **Deadheading is reduced.** The tanks can be left on the ground at a job site. The equipment used for filling the tank can be used elsewhere for a major part of the time.

• **A flatbed trailer becomes a tank wagon** if a container is lashed to the deck.

• **They are rugged.** The tanks, when hauled full, will withstand greater impact than the vehicle hauling them.

• **They are durable.** Several tanks delivered to the Army seven years ago are still in service.

• **They are convenient.** One western contractor has a battery of tanks for water set halfway down a hillside. Periodically a tanker fills them by a gravity flow from the top of the hill. Discharge from the tanks is also by gravity and is controlled by valves in the line at the bottom of the hill.

Unlike the pillow tanks, the Rolli-tankers are new. The unit as now manufactured by Goodyear consists of two fat tires, each with a 500-gal capacity, mounted in pairs on a tongued axle. The tongue carries an enclosed pumping unit for discharge of the fluid. The tankers can be towed over rough terrain and left near the point of need. This means the contractor need not tie up a tank wagon. Because of the flexibility of movement, he can often save himself from running long pipelines or hoses.

Explosive Fasteners for Fast Work Underwater

There's a new tool available for instantaneous fastening underwater to concrete or metal. Developed originally for underwater salvage work, the tool is designed to speed and simplify underwater fastening in high-strength concrete or steel plate $\frac{3}{8}$ in. thick.

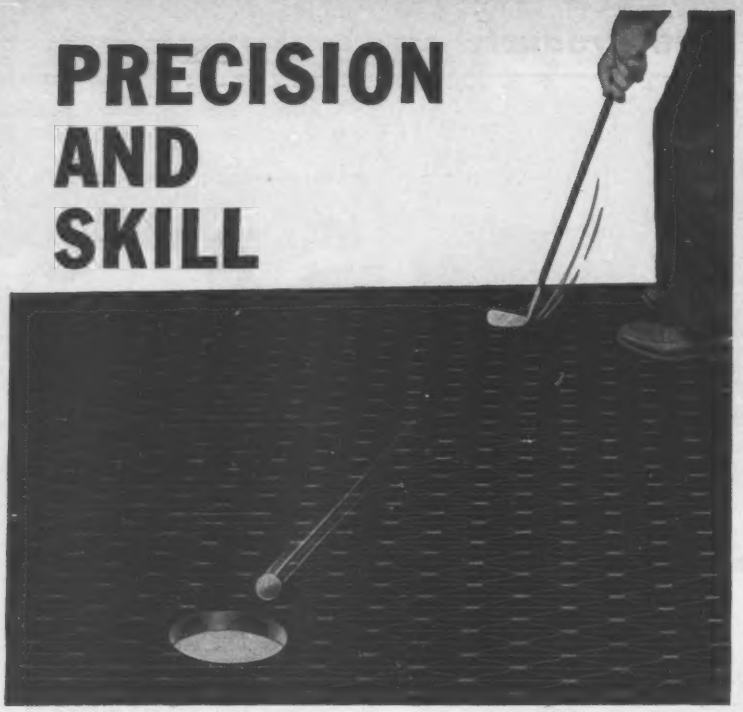
Rapid fastening is particularly important in underwater work because of the time required for a diver to surface. A diver working at a depth of 300 ft for half an hour needs 5 hours and 15 minutes of decompression time, either coming up or in a decompression tank.

The new tool is not affected by water pressure and can be reloaded underwater, unlike ordinary powder-actuated tools that must be brought to the surface for reloading. After the tool is fired, the entire barrel is discarded and replaced underwater. The barrel units are factory loaded with a fastener and powder load and hermetically sealed.

After loading a new firing unit, the diver can cock the tool easily without pushing himself away from the work. He can also tell, working in complete darkness, whether the tool is loaded. RAMSET FASTENING SYSTEM, OLIN MATHIESON CHEMICAL CORP., 460 PARK AVE., NEW YORK 22, N. Y.

(New Products continued p. 70)

PRECISION AND SKILL



GO INTO A GOOD GRATING

Making a top-quality grating requires as much precision and skill as playing an expert game of golf. The manufacture of grating demands a history of experience, precise engineering, and careful workmanship.

The champion in grating is always IRVICO. Why? Because IRVICO has developed a skill based on more than half a century of experience and know-how in solving tough problems of grating engineering. As a result, IRVICO grating products are known for giving superior performance under the most trying conditions.

When you want a grating that is engineered with the rigorous discipline of a consistent winner, specify IRVICO...you'll be sure to stay "out of the rough."

IRVICO

Catalog on request

IRVING SUBWAY GRATING CO., Inc.

ORIGINATORS OF THE GRATING INDUSTRY
EST. 1902

Offices and Plants at: 5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 20, CALIFORNIA

Arrow points to Joy's . . .

Dual Rotation System For Blasthole Driller

Joy has added its new dual rotation system to the TM-450 to come up with the 4½-in.-bore, 450-DR blasthole driller.

The system eliminates the need for conventional rifle-bar-actuated reverse rotation, and it adds more power for faster drilling, the manufacturer states.

Dual rotation is provided by a vane-type air motor that is connected to the drill chuck and controlled independently of the standard rifle-bar rotation. Because of its independent operation, there is no hammering of the drill steels during coupling or uncoupling, the maker points out.

The 450-DR can be mounted on the self-propelled TDL Trac-Drill or the deluxe self-propelled TDM. JOY MFG. CO., PITTSBURGH, PA.

A Loader and a Backhoe Made for Crawler-Tractor

A loader and a backhoe for sustained heavy-duty operations are available for use with the T-340 tractor-crawler.

The low-profile 465 loader has a rated capacity of 3,500 lb at full lift. A 64-in.-wide bucket holds ¾ cu yd struck and ⅞ yd heaped.

The loader has an automatic hydraulic self-leveling action that makes it possible to return the bucket from full dump height to a pre-set digging angle using boom control only.

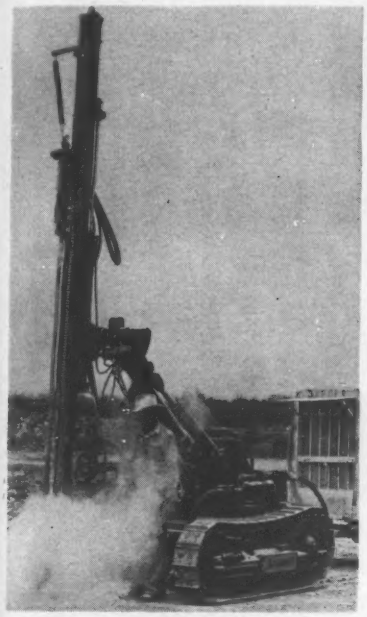
The 65 backhoe digs and maintains trench grades up to a depth of 10 ft. It has a 180-deg arc of swing and can dig efficiently at right angles to the tractor, the maker states. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

Road Widener Attachment Has Adjustable Strike-Off

The Model 605 is a back-of-any-truck attachment that spreads road shoulder material, sand, stone, aggregate or hot-mix on widening jobs.

The unit is secured by two cables that extend under the truck and hook to the front bumper. Tension jacks position the machine so the rear wheels of the truck butt up against the conveyor bumper rolls. A strike-off blade is adjustable for widths of 2 to 5 ft. Hand screws control height, permitting a constant grade of up to 5 in. above or below the surface, the maker states.

When ready to move to another job, large aircraft-type wheels swivel into traveling position. POWER-PACK CONVEYOR CO., 836 E. 140TH ST., CLEVELAND 10, OHIO.



Drill Mast Positioned With Push-Button Ease

Five "push-button" levers are manipulated to hydraulically position the drill mast of the Thor TR-5, a self-propelled, tractor-type rock drill rig.

The operator can power position the drill mast through 10 hydraulic movements, increasing drilling rate to two to three times, the maker states.

The TR-5 comes with a 4½-in. bore drifter, power feed mast for 10-ft steel changes. Hydraulic system is powered by 8-hp air motor interchangeable with the truck motors. Compressor is towed. THOR POWER TOOL CO., 175 N. STATE ST., AURORA, ILL.

Briefs . . .

• **Industrial gloves**—Gloves of knitted jersey coated with neoprene are said to be resistant to many chemicals, acids, oils and greases. The knitted base of the gloves offers increased flexibility and comfort. HOOD RUBBER PRODUCTS, DIVISION OF B. F. GOODRICH CO., WATERTOWN, MASS.

• **Automatic clutches**—The 600 series of automatic clutches is offered for the lower horsepower range in severe gasoline uses. Sealed ball bearings, rapid cooling, 360-deg lining, drag-free release at idling speed and easy servicing are cited. SALISBURY CORP., 1161 E. FLORENCE AVE., LOS ANGELES 1, CALIF.

• **Sidewalk scaffolds**—Sidewalk canopy frames designed to provide easy construction of covered walkways at construction sites. Frame size is 7 ft 6 in. by 6 ft wide. PATENT SCAFFOLDING CO., 38-21 12TH ST., LONG ISLAND CITY 1, N. Y.

• **Cable tensioning system**—Lightweight tensioning system for long-line pretensioning and post-tensioning of concrete members. Hydraulic, center-hole ram and single pump replaces four jacks and large pump. Unit No. X349. TEMPLETON, KENLY & CO., BROADVIEW, ILL.

• **Hoist tower**—"Mayco" single and double well towers, convertible from material to passenger use with capacities of 3,000 or 5,000 lb. TUBULAR STRUCTURES CORP. OF AMERICA, 2960 MARSH ST., LOS ANGELES 39, CALIF.

• **Torch-cutting scriber**—Simple, low-cost tool replaces expensive machines for guiding precision torch cuts made through thick metal plate. IDEAS, INC., 214 IVINSON AVE., LARAMIE, WYO.

• **Concrete machine**—The Weiler Extrusion Machine produces either one or two hollow or solid prestressed concrete slabs in widths up to a total of 5 ft maximum. In addition, the machine will convert readily to turn out up to eight prestressed concrete joists. Production speed is 8 fpm. INTERCONTINENTAL CO., 120 BROADWAY, NEW YORK 5, N. Y.

• **Road marking**—The Model 33 highway stripping spray gun is designed to perform at speeds up to 25 mph. The 5-gpm-capacity gun lays down a 10-in.-wide stripe. It needs 15.5 cfm of 50 lb air pressure and 50 lb material pressure. BINKS MFG. CO., 3114 CARROLL AVE., CHICAGO, ILL.

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★ Close-up view of an IRVICO pressure-locked aluminum grating carefully engineered to fit precisely around pipes and valves in a modern water-pumping station. ★ ★

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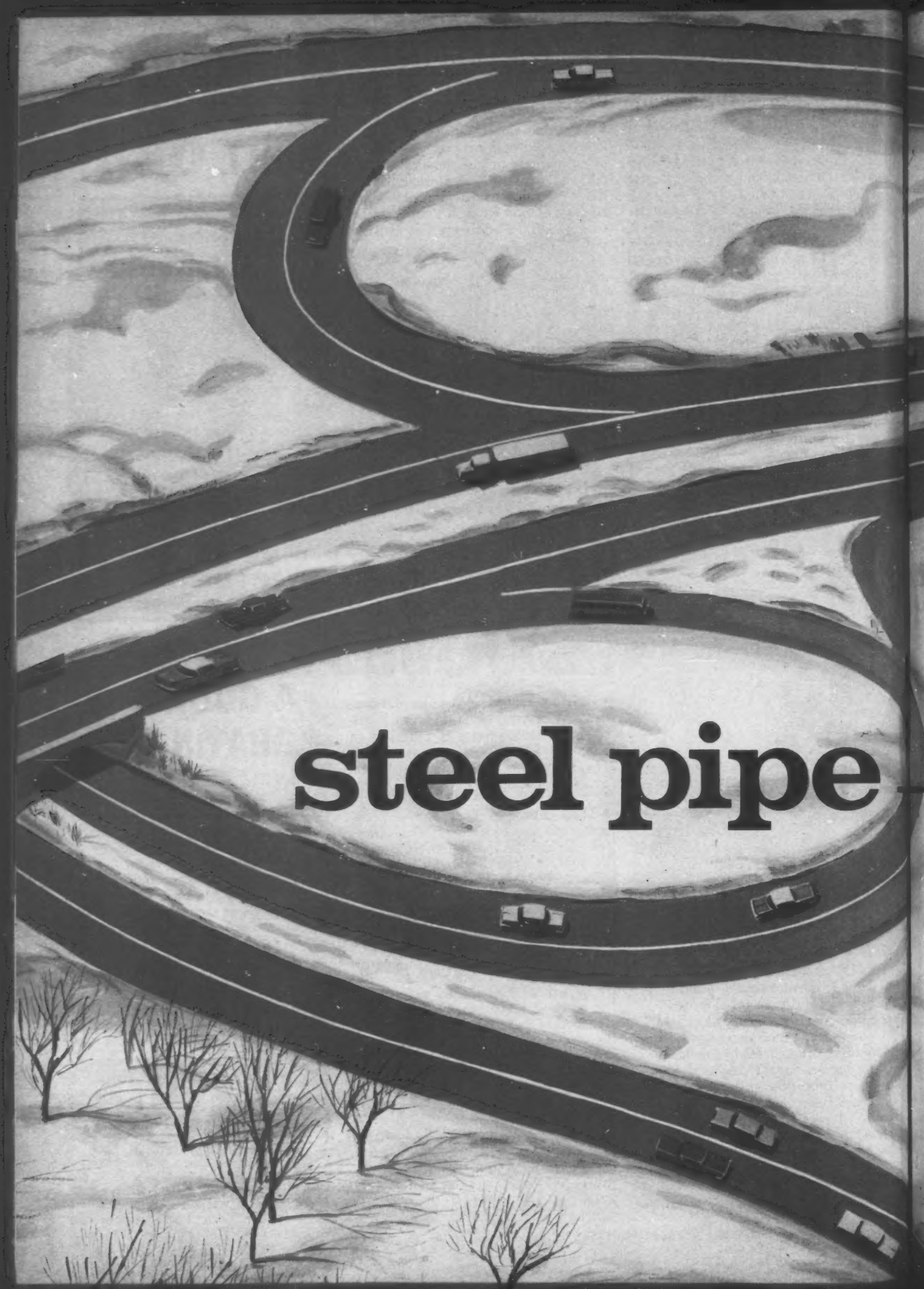
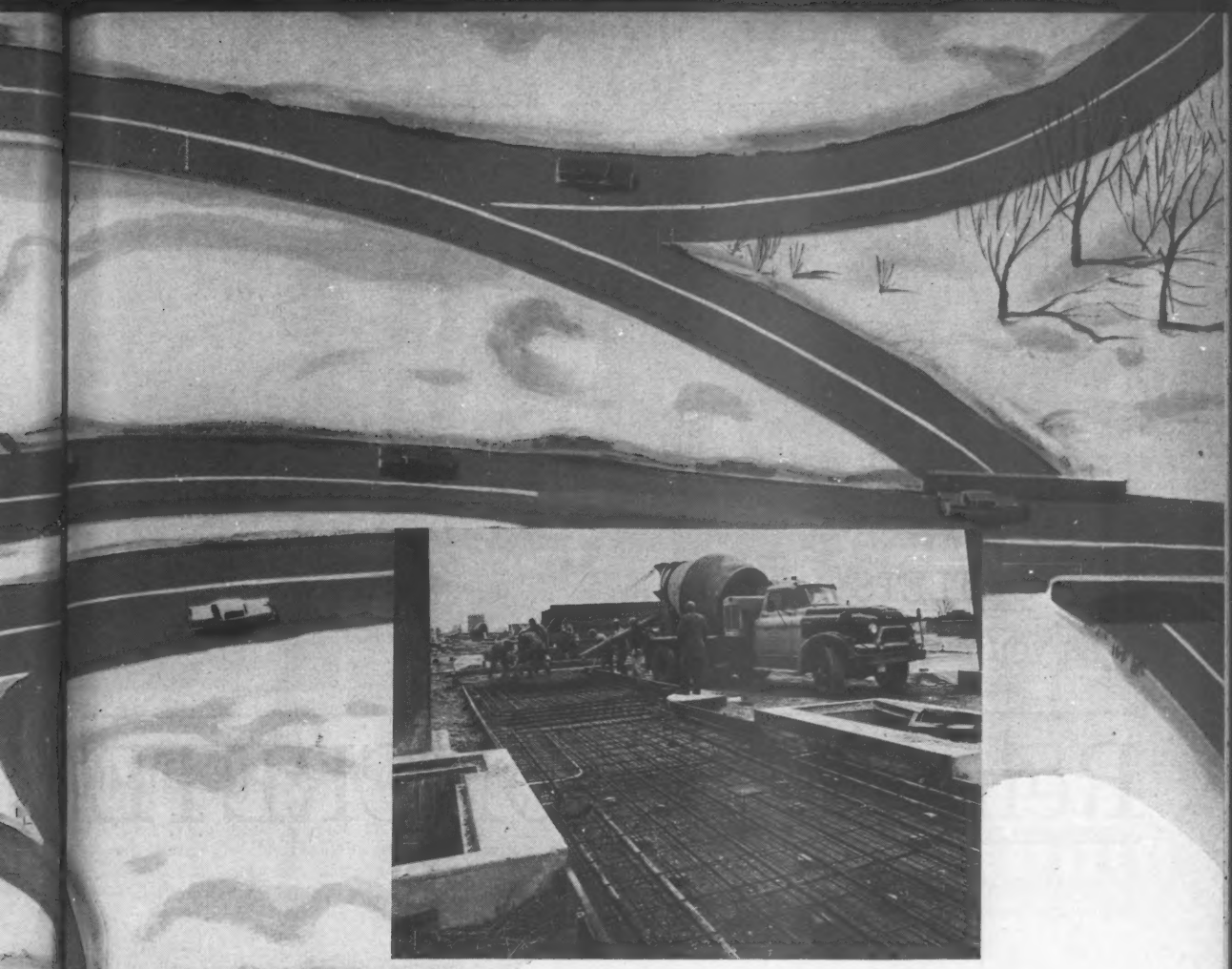

steel pipe



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For example, *steel pipe* carries safety to this new interchange on the Calumet Skyway in Chicago. Beneath the pavement, a layer of warmth keeps the roadway clear of ice and snow, warmth from a hot liquid circulating through embedded coils of dependable low-cost *steel pipe*. And clear pavements mean controlled driving conditions, safe driving conditions.

Automatic snow removal spells safety on the highway . . . on the sidewalk . . . on the runway. It's another example of the many kinds of jobs that *steel pipe* can do *best*.

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- Low cost with durability
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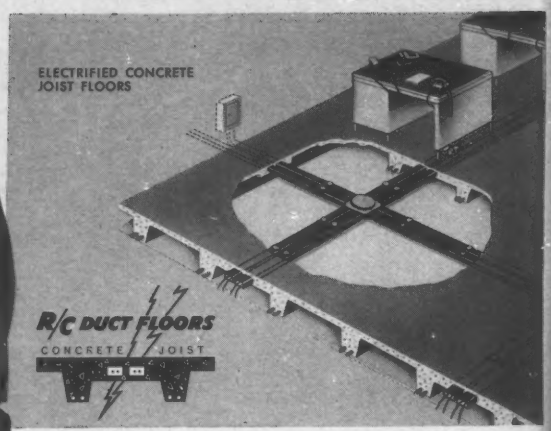

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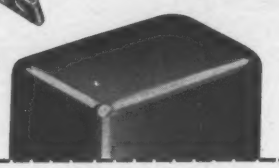
as you need them...



Reinforced CONCRETE

*Frame and R/C Duct Floors chosen for the Saratoga Building**

On many important projects, reinforced concrete and R/C Duct Floor construction are providing better structures for less money, for maximum fire safety, and low annual cost.

An outstanding example is the new $3,300,000 fifteen-story Saratoga Building in New Orleans. The architects chose R/C Duct Floors (electrified concrete joist floors) to provide tenants complete flexibility of electrical outlets to fulfill future as well as current requirements. Because the building had been almost 100% rented before working plan drawings and specifications were started, the architects were faced with an exact deadline for completion. The ready availability of materials for reinforced concrete thus influenced the architects to specify this economical and flexible medium of construction for the building frame.

Before you build, investigate this economical and flexible medium of construction. Compare . . . and you will design for REINFORCED CONCRETE.

CONCRETE REINFORCING STEEL INSTITUTE

38 South Dearborn St. CONCRETE REINFORCING STEEL INSTITUTE CRSI FOUNDED 1924 **Chicago 3, Illinois**

***Saratoga Building, New Orleans, La.** Architects: Herbert A. Benson and George J. Riehl † Structural Engineers: A. W. Thompson and Associates † General Contractors: R. P. Farnsworth & Company, Inc.†* † New Orleans, La.

Men and Jobs

Maj. Gen. Lee Bird Washbourne becomes . . .

Oklahoma's New Highway Chief

Lee Bird Washbourne is Oklahoma's newly appointed director of highways. Only one year ago he retired as an Air Force major general in charge of installations, a post he held for six years (ENR May 2, 1957, p 46).

During his 35 years with the military, Mr. Washbourne did extensive construction work with both the Army and Air Force engineers.

As chief of installations he handled about $1.7 billion in annual Air Force construction, including the Air Force Academy in Colorado. He also supervised a staff of 260 officers and 730 civilians.

In his new position, Mr. Washbourne draws a $15,000 a year salary.

A native of Jay, Okla., he graduated from West Point in 1927. He also holds a civil engineering degree from the University of California.

H. Miller Heads Seattle Sewage Project

Harold E. Miller, who directed a comprehensive sewage and drainage survey of the Seattle Metropolitan areas, has been chosen executive director of the newly-formed Metropolitan Council, the agency that will carry the project into construction. Salary: $17,500.

His first efforts will involve curbing pollution in Lake Washington which borders the city. Facilities costing $30.4 million are recommended for areas bordering Seattle and an additional $46 million worth of facilities for areas directly serving Seattle.

Mr. Miller is currently director of the Washington State Pollution Control Commission. He served as project engineer in charge of the metropolitan sewage and drainage survey, studying pollution in the Seattle district.

Edward Stone Designs Beirut College

Edward D. Stone has been chosen to design the buildings of a new campus for the International College near Beirut, Lebanon.

The college is now located on the campus of the American University in Beirut. The new campus will be at Aramoun on hills overlooking Beirut International Airport.

The development is expected to cost between $5 million and $7 million. It will be built entirely by local contractors.

(*Men and Jobs continued p. 76*)

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WEATHERTITE

POSITIVE SEAL for CONTROL JOINTS

To safeguard against cracks in block-constructed masonry walls, always use an approved Control Joint. To prevent water seepage through these control joints, always use WEATHERTITE seals. Two types are available: WEATHERTITE "R" for Michigan Control Joints; WEATHERTITE "RB" for Besser Control Joints. WEATHERTITE is a specially shaped strip of expanded Polyvinyl-Chloride which provides a permanent and effective watertight seal in standard control joints. See Sweet's Architectural File, or write for information on WEATHERTITE; EVERLASTIC GASKETS for stone coping, sills, masonry wall panels, etc.; and WATERSTOPS for sealing construction joints between cast-in-place concrete members.

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EQUIPMENT and SUPPLY CO.

456 W. Eight Mile Rd., Hazel Park, Mich.

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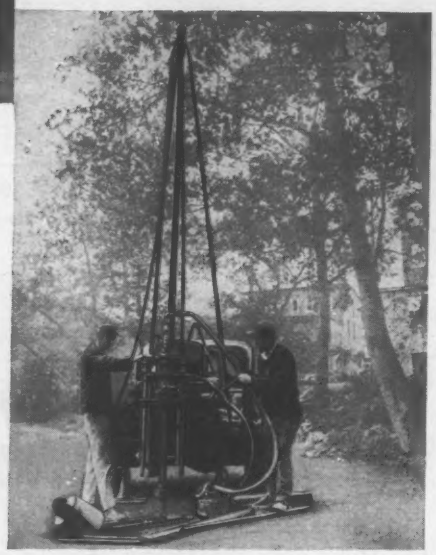

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Careers

Business

Frank P. Hyer, president of the Delaware Society of Professional Engineers, is the newly elected president and general manager of the Delaware Power and Light Co.

Horace I. Wood is supervising engineering in Bangkok, Thailand, for Litchfield Whiting Bowne & Associates, New York City. He has previously held positions with American Cyanamid and the government, working in Spain.

Frank N. Hubley has been appointed Westinghouse Electric's project supervisor for the installation of the giant waterwheel generators at the Lewiston power plant. The plant is part of the $720-million Niagara power project. Mr. Hubley joined Westinghouse in 1942 and has been electric service supervisor of the Hartford, Conn., engineering and service department.

Frank G. Weis has been named chief research engineer of Smith & Loveless, Inc., Lenexa, Kan., manufacturers of water and sewage treatment equipment.

Clifford C. Tabor has joined the Bechtel Corp., San Francisco, as senior engineer in the hydro department. He comes to Bechtel from Imperial Irrigation District, Imperial, Calif., where he was manager of the operations services department.

William A. Robinson has been named assistant general manager and chief engineer of the contracting division of Dravo Corp., Pittsburgh.

Granville M. Read, retired chief engineer of the Du Pont Co., is consultant to the president in research, engineering and development at Blaw-Knox Co., Pittsburgh. He supervised the design and construction for the $1.3-billion Savannah River Atomic Energy Project.

Jack M. Maki, Curtis N. Lindberg and **C. Melvin Frank,** Columbus architects, have formed their own company.

Eugene J. Guerrero is now a partner in the Atlanta architectural and engineering firm, Toombs, Amisano and Wells.

Charles B. Locke has been named to the technical staff in the concrete additive division of Super Concrete Emulsions, Ltd., Los Angeles.

Tracey, Cook & Brunstrom, consulting engineers, Seattle, Wash., has formed a partnership with Architect **Robert E. Dudley,** also of Seattle.

Newly elected officers in the Noland Co., Newport News, Va., distributors of plumbing and heating equipment, are **Lloyd U. Noland, Jr.,** chairman of the board, and **John E. Sommers,** president.

(*Men and Jobs continued p. 78*)

. . . . . What's the limit: Heat? Shock? Speed? Or complicated radial and thrust loads?

Name the combination of requirements . . . and chances are you'll find them met by a Rollway Maximum precision radial cylindrical roller bearing. If not, then Rollway engineers will modify any factor to meet your application.

Rollers are crowned to prevent end-loading and the resultant spalling of races. Directional trueness is maintained by retainers of standard bronze or "Rollube" ferrous alloy of one piece or two piece construction.

You may wish to refer to the Rollway Catalog and Engineering Data Book when writing specifications for a high precision bearing. It contains the first listing, by any manufacturer, of the thrust capacities of cylindrical radial roller bearings. Send for it today.

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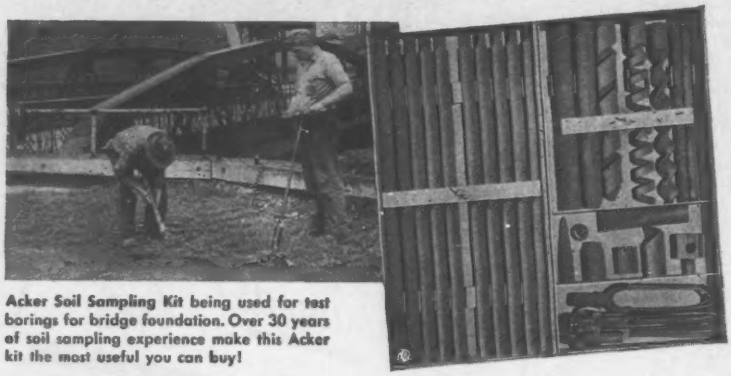
DON'T GUESS!

use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, you avoid costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26ENR.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

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1,000 car, 2-level hotel parking area. Architect: Welton Beckett & Associates.

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At the fabulous, new Beverly Hilton, as at leading airfields, parking lots, playgrounds and parkways, asphalt pavements are protected by Jennite liquid surface seal.

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Write for Bulletin L-352-56.

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. . . Men and Jobs

Education

Dr. Harold E. Langley, Jr., senior sanitary engineer with Arthur D. Little Co, Boston, has been appointed associate professor of civil engineering at the University of Rhode Island.

Arthur H. Faulds, associate professor of civil engineering at Syracuse University, has been named assistant director of engineering research of the College of Engineering. A member of the faculty since 1953, he teaches photogrammetry and has served as photogrammetric engineer with the government.

Charles E. Clarridge has been promoted from associate professor of engineering to full professor at Clarkson College of Technology. He has been with the university—his alma mater—since 1931 and has served with the Navy in the Civil Engineering Corps. Professor Clarridge has also worked for the St. Lawrence County Highway Department and has carried on consulting work in surveying and engineering.

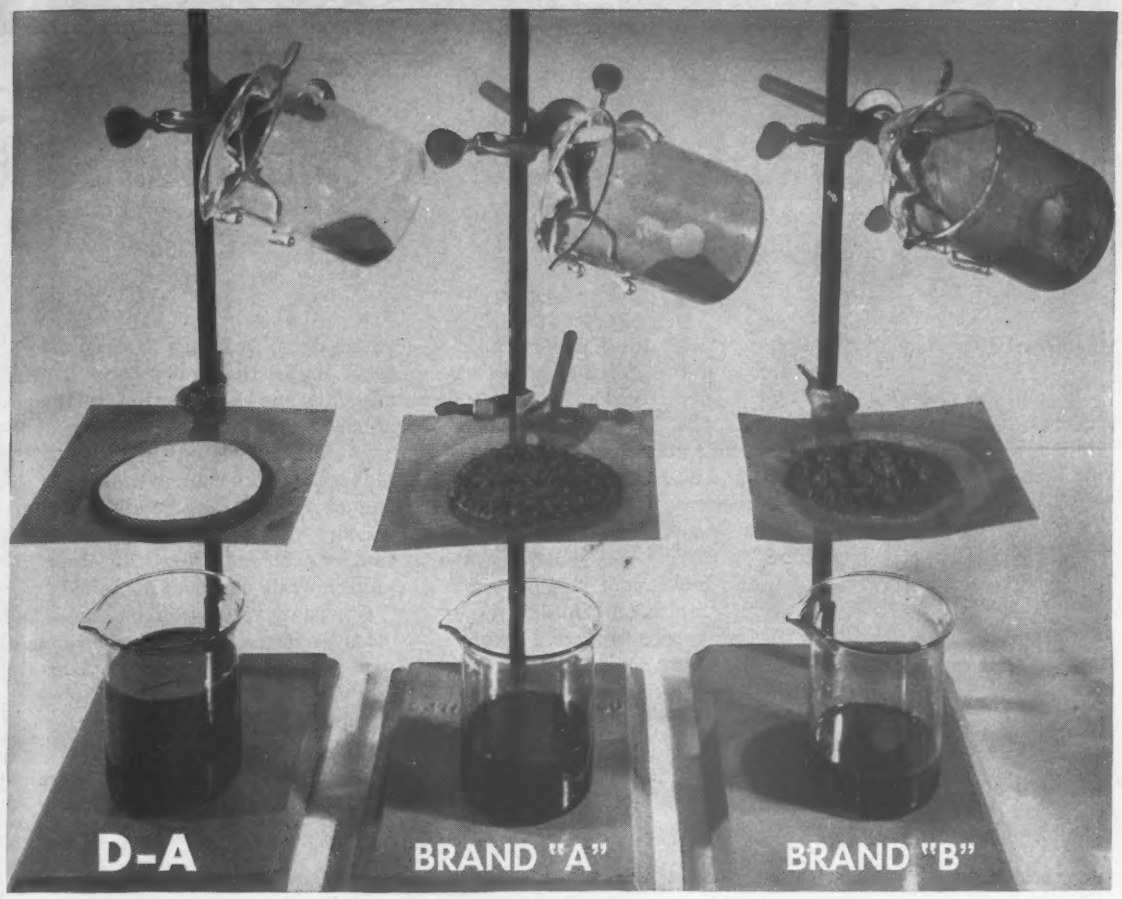
Dr. Fritz Sulzer is named assistant professor of sanitary science at the University of North Carolina, Chapel Hill. Since 1955 he has been working for the Swiss Federal Institute for water supply and sewage purification. The author of five papers, Dr. Sulzer will guide doctoral research students and teach sanitary chemistry and microbiology.

Honors

Ray M. Boynton has been awarded the honorary degree of Doctor of Engineering by the University of Maine. A graduate of the university, he has been for 30 years an associate of Dr. D. B. Steinman, consulting engineer, New York City. Dr. Boynton designed and supervised the substructure and main towers of the Mackinac Straits Bridge, Michigan, Sukkur Arch Bridge, Pakistan, and the Bosporus Suspension Bridge, Turkey.

Geroge T. McCoy, California State Engineer, was cited by the California State Legislature for his accomplishments in the field of modern highway transportation. Appointed state highway engineer in 1943, he is responsible for more than $2½ billion in state highway construction maintenance and operation.

Col. Stanley W. Dziuban, deputy division engineer of the U.S. Army Engineer Division, Waltham, Mass., has been appointed to the National War College at Washington. Ranking first in his West Point class of 1939, he was assigned his present post in 1957. He is responsible for $100 million annually in Army, Air Force flood control and harbor improvement construction.



Stop sludge, stop corrosion with D-A UNIVERSAL GEAR LUBE

The unretouched photograph above shows the results of a 24-hour accelerated oxidation or sludge test. On the right, two leading brands of gear lube are badly oxidized following the test while, on the left, D-A Universal Gear Lube remains clear, stable and capable of extended use.

Here's what this means to your operation: film strength is the element of a gear oil which prevents wear. To obtain high film strength, extreme pressure additives are placed in the lubricant. At a temperature of about 250° — often encountered in heavy-duty equipment operation — these additives can oxidize, as they have in the competitive oils seen above. When this oxidation occurs, the oils become extremely corrosive and rapid wear results. Tests prove that D-A Universal Gear Lube does not corrode, even at temperatures as high as 300° F.

D-A Universal Gear Lube does not sludge or oxidize under high operating temperatures because D-A research has established successful means of retaining the stability of D-A's high-quality base oil while maintaining the high film strength necessary for extra-heavy-duty equipment operation. For greater protection of *your* equipment under heavy load and high temperature conditions, specify D-A UNIVERSAL GEAR LUBE.

Lubricating heavy-duty equipment across the nation since 1919.

D-A LUBRICANT COMPANY, INC. • INDIANAPOLIS 23, IND.

Armco Products at Work on New Interstate Ro

Interstate Ohio 75 is the name of the sparkling new freeway version of tired, twisted old Route 25. In various stages of design, construction and use, the 213-mile limited access superway will link Cincinnati and Toledo when completed. As the pictures on these pages show, the designers and builders of this big road are relying time after time on products that have been proved in service . . . the family of Armco Drainage and Construction Products.

Armco FLEX-BEAM® Guardrail provides strong, easy-to-see, easy-to-maintain protection at key spots on completed sections. Armco Corrugated Metal Drainage Structures will serve under the heavy dead load of high fills, and the vibration and impact of just a few feet of cover. For abutment foundations on the many grade separation structures, thousands of feet of Armco Pipe Piling are being driven. And to solve a typical earth control problem, Armco Bin-Type Retaining Wall has been installed.

For complete data about these and other Armco Construction Products, just fill in and mail the coupon. Or, write us, outlining your project. Armco Drainage & Metal Products, Inc., 4569 Curtis Street, Middletown, Ohio. In Canada: write Guelph, Ontario.

LEFT: Where Interstate 75 crosses a state road north of Cincinnati, Armco Pipe Piling is driven for foundation of grade separation structure. State road will pass under the freeway.

RIGHT: Armco Bin-Type Retaining Wall holds earth in front of bridge abutment on section of Interstate 75 south of Lima, Ohio.

Send data on the Armco Products checked:

- ☐ Bin-Type Retaining Wall
- ☐ Water Control Gates
- ☐ Corrugated Metal Drainage Structures
- ☐ Guardrail
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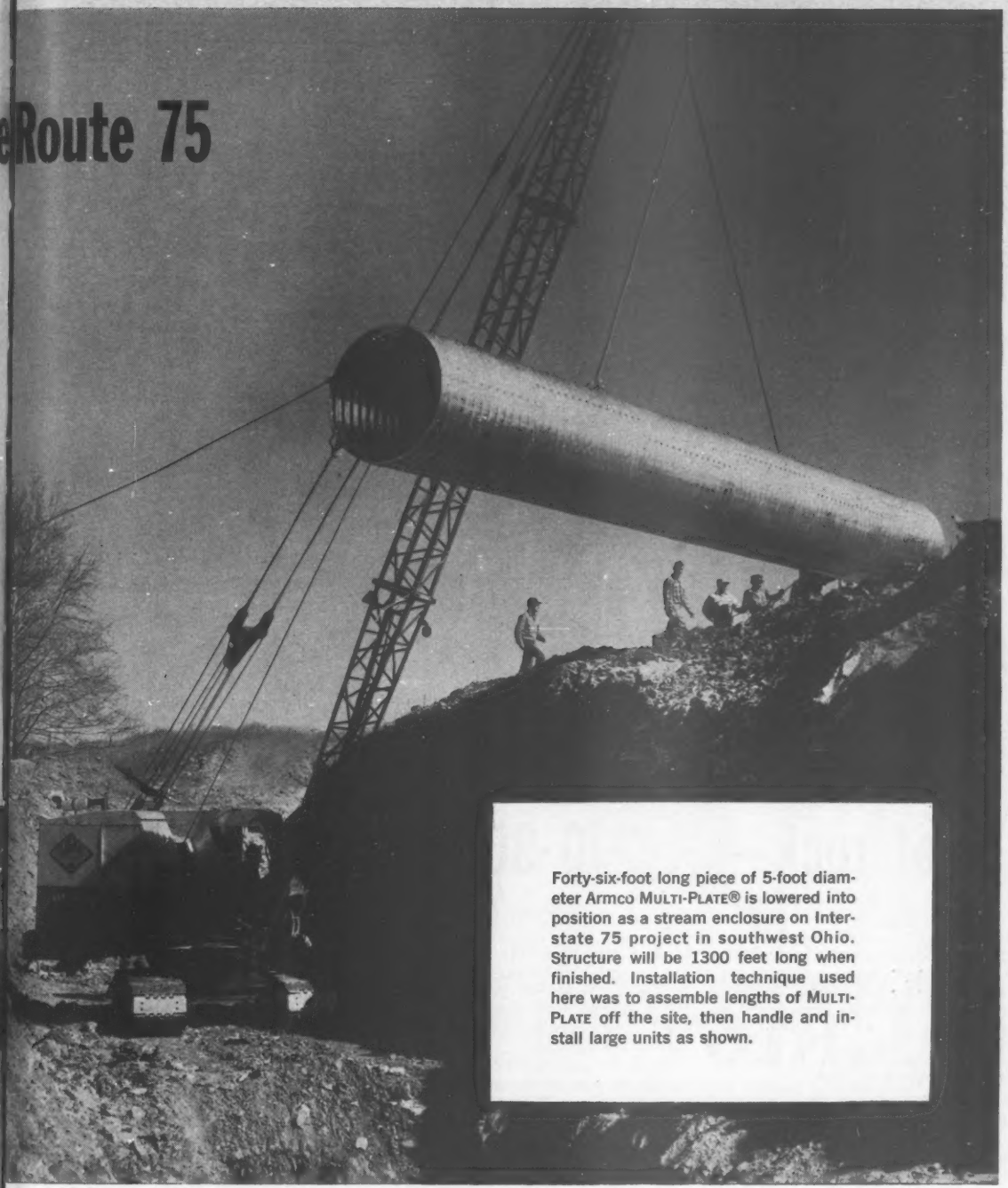

Forty-six-foot long piece of 5-foot diameter Armco MULTI-PLATE® is lowered into position as a stream enclosure on Interstate 75 project in southwest Ohio. Structure will be 1300 feet long when finished. Installation technique used here was to assemble lengths of MULTI-PLATE off the site, then handle and install large units as shown.

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Lima 1250 3½-yd. Shovel nears end of million-and-a-quarter-yd. excavating job on highway reconstruction project near Knapp, Wis.

"LIMA 1250 moves half million yards of rock—at 270-300 yards hourly!"

says Lawrence Gerke, Wisconsin contractor

The job was tough, the schedule tight. "In only 2 miles," says contractor Lawrence Gerke, of Merrill, Wis., "we had to excavate a million and a quarter yd. . . . almost half of it rock!"

High performance, low maintenance

The project involved reconstruction on U. S. Interstate 94 near Knapp, Wis. Gerke needed a high performance machine with low maintenance requirements. He says, ". . . After considerable analysis of equipment, we purchased a Lima Type 1250 for rock excavating. In many cases no blasting was done. Yet, working in this material, the Lima constantly averaged 270 to 300 yd. per hour. When shovel work was completed, the 1250 was easily converted in the field to a dragline."

The crawler-mounted Type 1250 has turned in outstanding performances everywhere as a 3½-yd. shovel, 85-ton crane, and variable dragline.

Air-controlled precision

Main operating and auxiliary functions are air-controlled for smooth, precision performance at full capacity operation. Choice of diesel engine or electric motor with torque converter.

Other features and available equipment include: Independent propel, extra-high-speed hoist attachment, third drum, power reversing hoist drum, two types of rigid and folding gantries. The 1250 can be knocked down to units of less than 60,000 lb. for haulage.

Whatever your job, there's a Lima type and size exactly right—½ to 6-cu. yd. shovels, cranes to 110 tons, draglines variable. Learn now why so many contractors agree with Lawrence Gerke when he says, "We are completely satisfied with the operation of our Lima." See your nearby Lima distributor or write to us.

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Obituaries

Thomas C. Shedd, 69, professor of civil engineering at the University of Illinois from 1925 until his retirement in 1958. A director of the American Society of Civil Engineers, 1954-56, Professor Shedd was also active in the American Railway Engineering Association and the American Society of Engineering Education.

John M. Ritter, 67, Indianapolis building contractor who was also an active builder in Miami.

C. Robert Fay, 59, a director of Pittsburgh Plate Glass Co. and vice president in charge of the firm's paint and brush division. He took over these duties in 1956 after serving as controller and vice president for 12 years.

Herman R. Neff, 80, chairman of the board of the George S. Rider Co., Cleveland engineering and architectural firm. He directed the designing of the Parmadale children's village, cottage-type buildings that have been widely copied.

John J. Locuoco, 54, properties director for Cleveland since 1953. He started with the city in 1942 as secretary to the properties director.

Chester E. Lintner, 65, retired civil engineer with the U. S. Army Corps of Engineers. He had also been civil engineer for the Spokane, Portland & Seattle Railway.

Edwin D. Smith, 82, retired Montgomery County, Ohio, sanitary engineer. He had also worked for 32 years with the National Cash Register Co., Dayton, supervising construction throughout the world.

William H. Evans, Sr., 64, president of the Evans Co., Youngstown, Ohio, contracting firm.

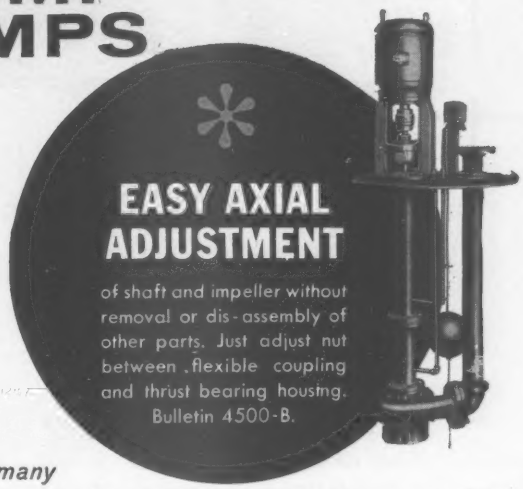
John Kemp-Welch, 90, Hamilton, Ontario, civil engineer, active in constructing the Welland Canal, Ontario.

Wade B. Patterson, 68, chief of the drafting section of the design branch of the Corps of Engineers, Portland District. He had been with the Corps for 31 years.

Wayne A. Perkins, 78, retired civil engineer for the California department of water resources. Starting his career with the federal bureau of reclamation, he helped plan Roosevelt Dam in Arizona.

(*Obituaries continued p. 84*)

DEMING VERTICAL SUMP PUMPS



EASY AXIAL ADJUSTMENT

of shaft and impeller without removal or dis-assembly of other parts. Just adjust nut between flexible coupling and thrust bearing housing. Bulletin 4500-B.

Just one of many

Deming features that mean longer life and lower operating costs

Ask for a recommendation on your next project.

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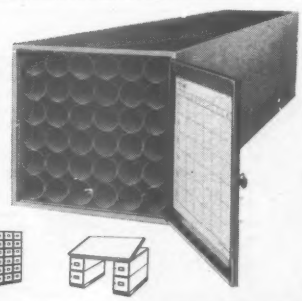
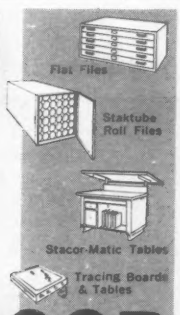
All steel-encased cabinets with steel-rimmed tubes for easy-to-find, safe print storage. Complete with either 36 (2¼" ID) or 9 (4⅜" ID) tubes, 5 lengths, 10 sizes. Files bolt together for stacking to any height. With locks if desired.





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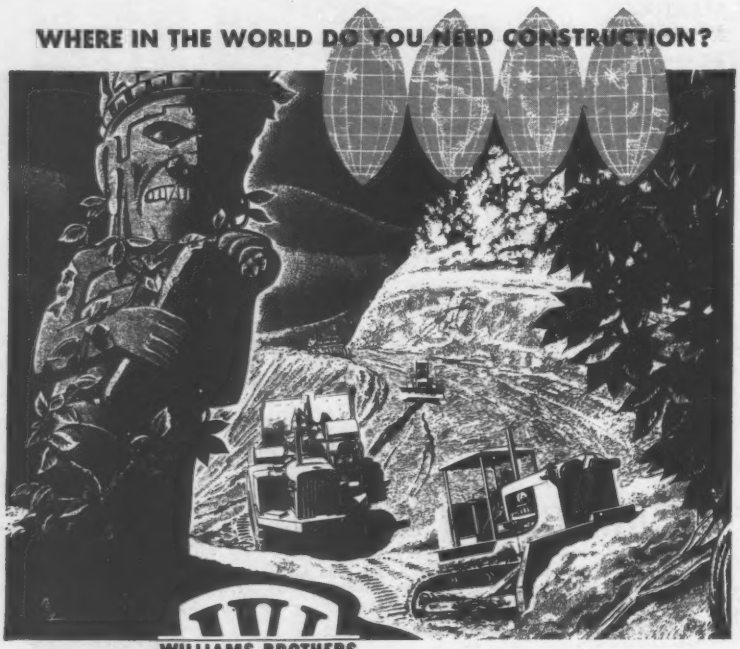

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. . . Obituaries

Richard Ward, 71, noted water supply dam builder. He was engineer in charge of the enlargement of Lake Mathews for the Metropolitan Water District of Southern California and at the time of his death was directing work to increase the lake's storage capacity.

E. L. Anderson, 68, superintendent for Tulsa Rig, Reel & Manufacturing Co., Tulsa. He had been with the firm for 20 years.

Charles Weiss, 68, retired civil engineer and maintenance expert with the Pennsylvania Railroad. Author of several books on railroad maintenance, he was with the railroad for 45 years.

George W. Porter, 71, contractor who supervised 500 miles of construction on the Alaska highway. He headed two Toronto construction firms before forming his own company in 1939.

Wallace R. Harper, 49, assistant executive vice president of the American Institute of Steel Construction, Inc., New York City.

Hubert E. Wilkler, 31, civil engineer for the Nello L. Teer Co., Durham, N. C. construction firm.

A. Judson Warlow, 80, retired chief engineer of the Pennsylvania General State Authority. Joining the Authority in 1937, he was responsible for major construction projects under the Federal aid system.

Milton L. Watts, 59, president-treasurer of the Watts Construction Co., Toledo and contractor of some of Toledo's largest buildings, notably the Ohio Bell Telephone Co., Libbey-Owens-Ford Glass Co. offices and the Toledo Express Airport Terminal.

Frank L. Haviland, 74, former vice president and general manager of Standard Steel Construction Co., Ltd., Welland, Ontario.

James R. Bannon, 62, retired civil engineer for the 13th Naval district at Seattle. He came to this position in the early 1940's after serving as engineer for Okanogan County, Wash., and the city of Wenatchee, Wash.

Frank S. Whitney, 65, public works director, Huntington, W. Va. Among his projects were a $11-million sewage treatment system and a sewer modernization program. He had also served as district engineer for the Kentucky department of highways before coming to Huntington.

Model R-27 has 4-speed Torqmatic Drive with converter lock-up . . . 336 h.p. engine . . . 18 cu. yds. struck capacity . . . 54,000 lbs. rated payload . . . standard or quarry body.

Rock Bottom Hauling Costs with Euclid Rear-Dumps

THE simple but rugged design of Rear-Dump "Eucs" has provided cost cutting performance in mines and quarries for over 25 years. This unmatched experience in building dependable off-highway haulers, combined with continuous product improvement and excellent dealer facilities for parts and service, results in high job availability and low maintenance cost.

Euclid's line of rear-dump haulers for mine, quarry and construction work is the most complete in the industry. With standard or quarry bodies, there are models with 10, 15, 18, 22, 27, 40 and 55 ton payload capacities . . . engines from 128 to 670 total h.p. . . . 5 and 10-speed transmissions and Torqmatic Drives. For close quarter work there are three over-hung engine models with semi-trailers of 12, 22 and 35 ton capacities.

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Georgia Rural Phone Lines

Fourteen contractors competed for this Rural Electrification telephone project in Leslie, Ga., for the Citizens Telephone Co. Engineering Associates, Inc., Atlanta, is the engineer. The award at $129,969 to Sandidge Construction Co., Memphis, Tenn., was 3% below the engineer's estimate. All bids were made on an assembly unit basis, and were broken down between labor and materials prices.

Work includes 19 miles of pole line with open wire, 110 miles of pole line with aerial distribution wire, 16.3 miles of pole line with aerial distribution cable, 0.2 miles of buried cable, 12.9 miles of service wire, and modification of 60 miles of existing lines. All wire, cable and service assembly units are 1,000 feet long.

The contractor must furnish all materials.

Rail, water and truck transportation are accessible to the site.

The bidding on this phone job included:

1C Sandidge Constr. Co., Memphis, Tenn.	$129,969
2 Bridges Constr. Co.	133,240
14 Singleton-Leath	161,206
EE Engineering Asso., Inc., Atlanta	134,000

Bids: 5-14-59 Items	Unit	Quantity	Unit Prices Labor	Matl
Pole units, 20', class 9	au	10	$3.50	$5.25
7	au	10	3.50	6.25
25', class 9	au	870	3.50	7.30
7	au	280	3.50	8.80
6	au	10	4.50	10.50
30', class 9	au	45	5.00	9.00
7	au	170	5.50	11.20
6	au	10	7.00	13.00
5	au	10	7.75	15.20
35', class 7	au	20	16.00	14.00
40', class 6	au	5	20.00	22.00
45', class 5	au	5	24.00	31.00
Buried cable & wire assembly, 24 gage, 25 pair	au	0.800	800.00	306.00
75 pair	au	0.535	900.00	700.00
100 pair	au	0.225	950.00	825.00
Misc assem units for buried plant, riser grd, 3½"IDx5'	au	5	1.50	4.25
Pole top assem, crossarm type, type 2A, 2 pin crossarm	au	20	0.75	0.85
with brace	au	25	0.90	1.25
type 2B, single 2 pin sidearm	au	45	1.65	2.00
10A, single 10 pin xarm.	au	115	1.75	5.40
10B, single 10 pin xarm.	au	10	1.75	5.40
type DE, deadend, 2 single xarm (Buckarm)	au	10	5.50	10.10
single xarm	au	10	2.75	5.05
type 10A, s 10 pin sidearm.	au	10	3.00	9.50
Aerial cable assem units, plastic insul & jacketed, supported by 6,000# strand, 18 pair, 22 gage	au	22.660	20.00	248.00
25 pair, 24 gage	au	15.094	22.50	259.00
22 gage	au	11.600	25.00	296.00
50 pair, 24 gage	au	22.144	25.00	392.00
75 pair, 24 gage	au	4.321	65.00	512.00
150 pair, 24 gage	au	0.930	125.00	1,000
200 pair, 24 gage	au	1.650	200.00	1,250
100 pair, 24 gage	au	0.500	100.00	715.00
Wire assembly units, .080", 30% conductivity	au	114.4	3.50	8.30
.080", 40% conductivity	au	30.7	3.50	9.00
Aerial distr wire assem units, 1 pair, .064", 30% conduct w cop conduct, incl sup wire	au	189.900	$5.00	$36.00
19 gage, 2 pair	au	134.400	6.00	55.00
4 pair	au	169.610	8.00	85.00
6 pair	au	55.840	10.00	106.00
12 pair	au	2.470	16.00	200.00
22 gage, 12 pair	au	7.700	16.00	145.00
Down guy, 2.2M strand	au	115	1.75	2.10
6M strand	au	180	2.25	4.10
10M strand	au	40	2.75	5.60
16M strand	au	10	4.00	9.00
strain insul type, 6M strand	au	10	4.00	6.20
gnd conn type, 2.2M strand	au	10	2.25	2.85
6M strand	au	10	3.00	4.75
Overhead guy, 2.2M strand	au	10	4.00	4.00
6M strand	au	15	6.00	7.00
16M strand	au	10	8.00	13.00
strain insul tp, 2.2M strand	au	10	6.00	5.00
6M strand	au	10	9.00	9.00
16M strand	au	10	12.00	17.50
Anchor assembly units patent anchor 4,000#	au	500	2.50	2.60
6,000#	au	75	3.00	4.25
screw anchor, 2,500#	au	10	2.00	3.50
swamp anchor, 6,000#	au	10	8.00	12.00
Terminal & loadg coil assem, prot cable term w stub, strd mtd, paper insul, lead-shthd 200 pair	au	12	20.00	65.00
unprot aer distr wire term, pole mtd, 6 pair	au	64	4.00	5.20
11 pair	au	3	8.00	10.50
prot aer distr wire term, pole mtd, 1 pair	au	67	1.50	3.00
6 pair	au	81	4.00	16.50
11 pair	au	15	8.00	23.00
Term block for ready acc encl, w leads, 6 pair unprot	au	100	4.00	3.20
3 pair protected	au	70	4.00	9.40
Loading coils, indiv mtd in a pole mtd housing, incl prot, 1 coil	au	1	4.00	47.00
2 coil	au	6	5.00	53.00
4 coil	au	2	6.00	64.00
6 coil	au	4	7.00	76.00
Loading coils for ready acc enclos, 3 coil unit w plastic insul lead wires, for mtg in HA-R assem units.	au	7	$6.00	$14.00
Aerial cable encl assem unit, for plastic insul cable, for mtd ready acc enclos, incl set up, mounting, bonding cable shields, w hardware, etc, 1 unit	au	125	3.00	8.75
2 unit	au	5	15.00	19.00
3 unit	au	2	15.00	12.00
Par drop wire assem #18 AWG, copper-covered steel	au	68.2	20.00	40.00
Outside distr wire assem, 1 pair aerial distr wire #14 AWG (.064") copper-covered steel conductors	au	0.1	40.00	80.00
Ground & misc assembly units, pole lightning protector	au	1,445	0.25	0.35
pole ground assembly	au	55	2.00	1.60
bond wire assem for bonding aerial cable strand to elec syst neutr, other cable strd on same pole or pole gnd assembly	au	15	0.75	0.75
aer gnd wire of .104-40% cop cov stl wire, not more than 200' long, incl misc hdw	au	5	8.00	3.25
cable exten arm, short	au	5	10.00	17.00
pole step unit, per pole	au	175	2.50	4.50
guy guard	au	15	2.00	4.00
push brace accessories	au	195	5.00	8.25
pole marking, per pole, route & pole number	au	2,600	0.10	0.10
Central office cable entrance, buried or underground	au	1	200.00	255.00
	au	1	150.00	160.00
	au	1	250.00	555.00
Outside sta protector, metallic pipe syst ground	au	30	2.00	2.80
electric system ground	au	60	2.00	3.00
gnd rod w bond to elec gnd	au	120	4.00	4.55
	au	20	3.00	4.80
ground rod	au	50	2.75	3.60
Lightning arrest w bridle, gndg wire & hdw, s pair	au	10	3.00	2.40
5 pair	au	10	8.00	7.85
Open wire pwr cent prot, w lead wire & hdw, s pair	au	50	2.00	4.15
5 pair	au	10	8.00	20.00
Rt of way, clear & trim, 1000' x8', 1 side of pole	au	0.410	40.00	.....
1000'x10', 1 side of pole	au	1.0	40.00	.....
meas 5' each side of pole	au	15.619	40.00	.....
1000'x20', meas 10' each side	au	5.520	50.00	.....
Trim trees, 1000' unit	au	3.270	80.00	.....
Pin & insul assem, incl transp & deadend units, 2 wood pins & insulators	au	170	0.20	0.75
2 long shank steel pins & insulators, ⅝"	au	10	0.30	1.85
transposed wire sup, 2 wood pins & 2 dbl groove insul	au	20	0.30	1.25
2 long shank stl pins, ⅝", & 2 dbl grv insul.	au	20	0.40	2.30
Deadend w clevises & spool insul, xarm mtd, 2 wire, flat	au	25	1.00	3.00
dbl	au	10	2.00	4.50
pole mtd, 2 wire, vert	au	15	1.25	3.00
dbl	au	20	2.50	4.75
It wgt tandem transp bracket w dbl groov insul & short shank pin, ½"	au	150	0.75	2.40
⅝"	au	60	1.00	3.25
Xarm tp pole assem on exist poles, 2 pin sdarm, tp 2B s	au	25	1.75	2.00
10 pin sdarm, tp 10A, s	au	10	2.40	5.40
tp 10B, s	au	10	2.40	5.40
deadend, s xarm, type DE	au	10	3.75	5.05
down guy, 2.2M strand	au	20	2.25	2.10
6M strand	au	55	2.75	4.10
10M strand	au	25	3.25	5.60
gnd conn tp, 2.2M strand	au	45	2.75	2.85
6M strand	au	75	3.25	4.75
overhead guy, 2.2M strand	au	10	3.75	4.00
6M strand	au	15	6.00	7.00
gnd conn tp, 2.2M strand	au	10	4.25	4.75
6M strand	au	10	6.50	7.75
Wire assem units on existing poles, A 080-30%	au	96.400	$3.50	$8.30
A 080-40%	au	63.300	3.50	9.00
Remove units from exist plant, 20' pole	au	10	3.00	....
25' pole	au	10	3.50	....
30' pole	au	10	4.00	....
2 brackets	au	25	0.25	....
2 PX-arm	au	15	0.50	....
6 PX-arm	au	15	0.75	....
10 PX-arm	au	15	1.00	....
pin & insul assembly unit	au	50	0.20	....
guy assembly unit	au	10	0.50	....
anchor assembly unit	au	10	1.00	....
bracket type pole top assem	au	10	0.50	....
	au	15	0.25	....
Rearrange, 2 brackets	au	15	2.00	0.20
2 wire vert deadend	au	10	2.50	0.20
protect assem unit xarms	au	5	1.75	0.25
	au	40	3.00	0.25
guy assembly unit	au	10	2.50	0.50
ground & misc assem units	au	8	2.00	0.25
wire assem units	au	224	2.00	0.50

au Assembly unit
Completion schedule: 100 cal. days. Liq. dam. $80/day

Biloxi, Miss., Stadium Will Cost $31 per Seat

A municipal stadium for the city of Biloxi, Miss., to seat 8,500 persons in 35 rows, will cost an average of $31 per seat. John T. Collins, Biloxi, is the consultant.

The award at $263,460 to J. P. Starks, Biloxi, is 1.3% above the engineer's estimate.

Footings, columns and girders are class A concrete. Roof and seat slabs are precast concrete. The seats are wood. Home side of the structure is 80x246 ft, visitors' side 80x145 ft, for a total of 31,280 sq ft. Both sides are 34 ft high at the back.

The following is an analysis of the dollar and percentage cost:

Items	Amount	% of Total	$/sf	$/seat
Area 31,280 sq ft				
General contract	$157,240	59.7	$5.03	$18.50
Electrical work, incl field lighting	47,990	18.2	1.53	5.65
Precast concrete roof & seat slabs	46,420	17.6	1.48	5.46
Plumbing & heating	11,610	4.5	0.38	1.39
Total	$263,460	100.0	$8.42	$31.00

Now under construction, completion is scheduled for Sept. 18. Liquidated damages are $50/day.

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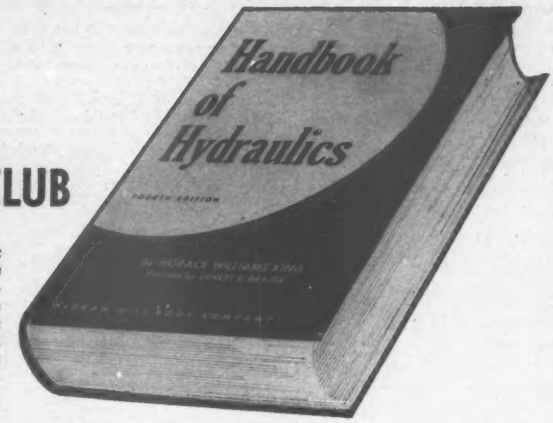

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All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
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	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	FIR PLYWOOD ⅜" Interior plyscored, C-D gr.	¾" Plyform grade*
Atlanta n†R	$97.00	$102.00R	$90.00	$90.00	$100.00	$100.00	$137.00	.....	.....	$117.00	$156.00	$172.00	$306.00
Baltimore e	100.00	100.00	100.00	105.00	110.00	110.00	125.00	.....	.....	175.00	190.00	180.00	280.00
	124.00g	*130.00g*	*130.00g*	*135.00g*	*135.00g*	*135.00g*	*152.00g*	*$180.00*	*$170.00*	.....	.....	.....	.....
Birmingham n†r	83.00	85.00	82.00	84.00	89.00	95.00	111.00	.....	.....	116.00	168.00	130.30	220.50
	80.00	*80.00*	*83.00*	*81.00*	*81.00*	*98.00*	*88.00*	*85.00*	*88.00*	.....	.....	.....	.....
Boston n±	107.00f	107.00f	112.00f	112.00f	112.00f	123.00a	.....	.....	.....	.....	.....	181.00c	315.00c
	118.00	*114.00*	*125.00*	*125.00*	*125.00*	*125.00*	*144.00*	*146.00*	*167.00*	.....	.....	.....	.....
Chicago **	127.00	130.00	114.00	138.00	146.00	147.00	142.00	.....	.....	170.00	170.00	161.00	269.00
	133.00	*133.00*	*146.00*	*144.00*	*144.00*	*145.00*	*163.00*	*153.00*	*153.00*	.....	.....	.....	.....
Cincinnati n*	102.50	103.75	96.50	98.00	104.75	112.75	121.00	.....	.....	136.00	125.00	102.00f	200.00f
	110.75	*113.75*	*116.00*	*117.00*	*116.00*	*133.75*	*143.25*	*143.25*	*143.25*	.....	.....	.....	.....
Cleveland n**	102.00	105.00	102.00	102.00	104.00	108.00	.....	.....	.....	.....	.....	131.00a	231.00
	.....	.....	*125.00*	*122.00*	*127.60*	*132.00*	*150.00*	*150.00*	*150.00*	.....	.....	.....	.....
Dallas ‡R	76.00k	85.00k	80.00k	80.00k	78.00k	78.00k	126.00	.....	.....	133.00	160.00	112.50ac	200.00ac
Denver n*	*Not in stock*		*124.50*	*130.50*	*130.50*	*131.50*	*142.00*	*160.00*	*180.00*	.....	.....	154.00	281.50
Detroit ‡	138.00	140.50	138.00	138.00	143.50	143.50	.....	.....	.....	151.50	.....	180.00pc	270.00pcR
	142.25	*142.25*	*153.25*	*151.50*	*160.00*	*165.50*	*204.00*	*221.00*	*221.00*	.....	.....	.....	.....
Kansas City in	125.00	125.00	135.00	137.50	140.00	150.00	.....	.....	.....	.....	.....	160.00	260.00
	125.00	*125.00*	*135.00*	*137.50*	*140.00*	*145.00*	*175.00*	*225.00*	*225.00*	.....	.....	.....	.....
Los Angeles zmu	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*108.00*	*136.00*	*141.00*	*141.00*	.....	.....	140.00	260.00
Minneapolis os	*145.00m*	*145.00m*	*145.00*	*145.00*	*145.00*	*145.00*	*185.00*	*185.00*	*185.00*	.....	.....	200.00	320.00
Montreal %p	84.00a	90.00a	84.00a	84.00a	90.00a	125.00a	.....	.....	.....	120.00	120.00	119.25	225.95
	160.00	*160.00*	*160.00*	*160.00*	*160.00*	*160.00*	*170.00*	*170.00*	*170.00*	.....	.....	.....	.....
New Orleans †n	89.00	89.00	96.00	95.00	95.00	98.00	126.00	.....	.....	160.00	155.00	122.41	215.00
	128.00	*138.00*	*117.00*	*138.00*	*138.00*	*138.00*	*140.00*	*140.50*	*160.50*	.....	.....	.....	.....
New York t	119.00	120.00	129.00	129.00	129.00	135.00	245.00	.....	.....	245.00	255.00	131.20a	225.60a
	.....	.....	*151.00*	*152.00*	*152.00*	*135.00*	*174.00*	*174.00*	*174.00*	.....	.....	.....	.....
Philadelphia nt	110.00	110.00	110.00	114.00	119.00	124.00	135.00	.....	.....	.....	.....	170.00kR	250.00k
	.....	.....	*135.00*	*135.00*	*135.00*	*135.00*	*145.00*	*145.00*	.....	.....	.....	.....	.....
Pittsburgh nt	115.00	120.00	130.00	120.00	145.00	145.00	165.00	.....	.....	160.00	185.00	225.00	295.00
	140.00	*180.00*	*140.00m*	*150.00*	*155.00*	*160.00*	*220.00*	*200.00*	*200.00*	.....	.....	.....	.....
St. Louis lnt	124.00	126.00	134.00d	134.00d	134.00e	138.00e	.....	.....	.....	.....	.....	179.46achj	281.32ach
	.....	.....	*145.00*	*145.00e*	*145.00e*	*147.00e*	*199.00a*	*199.00a*	*199.00*	.....	.....	.....	.....
San Francisco nz	*92.00*	*92.00*	*96.00*	*98.00*	*98.00*	*98.00*	*110.00*	*131.00*	*131.00*	.....	.....	98.00k	190.00k
Seattle n†	*68.00*	*80.00*	*85.00*	*85.00*	*82.00*	*84.00*	*100.00*	*105.00*	*105.00*	.....	.....	115.00aeg	230.00aeg
Toronto *	101.00a	106.00a	96.00a	92.00a	94.00	93.00a	110.00a	.....	.....	95.00a	.....	256.00	326.00
	113.00	*113.00*	*117.00*	*120.00*	*125.00*	*123.00*	*138.00*	*135.00*	*135.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to centr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. •a Spruce. •b Federal tax exempt, add 6% mun. & prov. tax. •c 5M lots. •d 8, 10, & 12 ft. lengths. •e 8 to 16 ft. lengths. •f Hemlock •g No. 1 common. •j 8 ft. lengths. •k No. 3 common. •l Add 2% sales tax. •m Up to 16'; No. 3 western pine. •n Less 2% disc. 10 days •o Less 2% disc. 10th. •p Less 1% disc. 10 days. •q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. •r for f.o.b. city price add $8 for pine, $35 for fir. •s asd truckllots •t trucklots del. •u Retail LCL yard. •v Retail LCL, del. •w add 6% mun. & Prov. tax. •x add 4% sales tax.

* PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, ⅜", $166.00; ½", $166.00 Exterior, waterproof, ⅜", $170.00; ¾", $190.00. •a Delivered. •c Truck lots. •d A-C exterior. •e LCL. •f less 1%, 5 days. •g less 2% for cash. •h less 2% disc, 10 days. •j add 2% sales tax.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots
Atlanta	78%	80%g	$0.2695
Baltimore	74%d	74%d	.2695
Birmingham	82%f	82%f	.2495
Boston	72+10%p	72+10%p	.2695
Chicago	72%	72%	.2495
Cincinnati	74%	74%	.2695
Cleveland	74-2-10%	74-2-10%	.2695
Dallas	76%	76%	.2770
Denver	73.5%	73.5%	.2695
Detroit	74-10-10%	74-10-10%	.2695
Kansas City	76-10-10%	76-10-10%	.2695
Los Angeles	$12.88/17.32h	$10.45/14.13h	.2695
Minneapolis	71-10%	71-10%	.2695
Montreal	40-10-5%b	40-10-5%b	23.20h
New Orleans	76%q	76%q	.2695
New York	79%l	79%l	.5030g
Philadelphia	78%	80%	.2695
Pittsburgh	72%	72%	.2695
St. Louis	72-10-10%mo	72-10-10%mo	.2695
San Francisco	60%	73%	.2695
Seattle	$8.85/11.55hig	$6.41/8.67hjp	.2695
Toronto	$6.49/9.57h	$5.90/8.70h	.2695

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: •a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. •b sales tax extra. •c 77% for single strength. •d From 6/15/52 list. •e 77% for double strength. •f Single strength; double strength, 53%. •g From 8/1/58 list. •h 5s/ds, 40-in. •j 20 boxes min. •k CL quantity. •l eff. 12/58. •m eff. 10/15/56. •n less 2% disc, 10 days. •o less 1% disc, 10 days. •p add 2% sales tax. •q less 1% for cash. •q less 2% for cash

Explosives: * Cartridges of 1¼" diameter or over, in standard lengths. •g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. •h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $23.80 in fiber cases: forcite 40%, $23.20; forcite 60%, $24.95.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 300,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2095	$0.2195	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

* All areas except those in Group 2 and N.J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucieand south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES, TIES

PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*§ R	By Rail Fir R
12" at butt	6-in.	30 to 39-ft.	$0.32a	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.69	....
12"—2-ft. from butt	6-in.	45 to 49-ft.	.73	....
12"—2-ft. from butt	6-in.	50 to 54-ft.	.77	....
12"—2-ft. from butt	6-in.	55 to 59-ft.	.81	....
14"—2-ft. from butt	6-in.	60 to 64-ft.	.87	....
14"—2-ft. from butt	6-in.	65 to 69-ft.	.92	....
14"—2-ft. from butt	6-in.	70 to 74-ft.	1.02	1.07
14"—2-ft. from butt	6-in.	75 to 79-ft.	1.07	1.07
14"—2-ft. from butt	5-in.	80 to 84-ft.	1.17	1.10
14"—2-ft. from butt	5-in.	85 to 89-ft.	1.27	1.15/1.20

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	.....	4.00a	.....	4.50a
New York	S. L. Sap Pine	2.50	4.00	3.00	5.00
	Mixed Oak	2.50	4.00	3.00	5.00
Philadelphia	Mixed Oak	2.38	3.97	2.78	4.57
St. Louis	Mixed Oak	2.70	3.15a	3.15h	3.80ah
San Francisco	Douglas Fir	2.66ef	3.73ef	3.52ef	4.90ea

Tr.—Treated; Untr.—Untreated. a Creosoted. c Empty cell. e Green f.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. •h 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21.20

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165

Announcing WORLD'S TOUGHEST OFF-ROAD TIRE!

All-New Nylon U. S. Royal Super Con-Trak-Tor with ...69% to 95% Longer Tire Life!

S.R.T.*

Steel Reinforced Tread*

New S.R.T.—as shown here in the X-Ray photo—is a **tough** reinforcement of tread, shoulder and buttress areas. It consists of several thick layers of tread rubber containing thousands of short lengths of brass-coated steel filaments. This forms a virtually **impenetrable** mat between the tread and nylon cord body and extends down through the shoulder and buttress areas providing **positive** protection against combination cut-and-impact failures!

Add to exclusive Steel Reinforced Tread... 50% deeper tread at center... far deeper tread at shoulder... 25% more ground contact... Double-Strength Nylon and you have the world's **toughest** off-road tire! No wonder the great new U. S. Royal Super Con-Trak-Tor-S.R.T. outperformed **every** tire put against it—by the widest of margins—up to 95%! Can you afford less on **your** jobs?

U.S. ROYAL SAFETY 1st TRUCK TIRES

US RUBBER **United States Rubber**

ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

† **Theodore Loranger & Sons,** 404 Nash Rd., New Bedford, Mass., CA **$766,517,** treatment plant for surface water supply sys., Pease Air Force Base, ENG-19-016-59-152, PORTSMOUTH, N. H. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids July 21, awarded Aug. 6. CD 7/27, under LB.

▲ **CONNECTICUT**—State Hy. Comr. 170 Douglas St., Hartford,
cancelled bids to have been opened Aug. 24, grading, drainage relocation 2,428 in. ft. Rte 8, incl. 5 bridges from Broad St. to Rte. 67, Fed. Aid Proj. U-47-(8) Seymour, **$1,800,000.** CD 8/4.

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford,
cancelled bids to have been opened Aug. 25, c. conc. 17,607 lin. ft. Relocation Rte. U. S. 6 incl. 9 bridges, etc. Fed. Aid Proj. I-84-1 (6) 12 Newtown, **$3,200,000.** CD 8/5.

BUILDINGS—LB & CA

Carroll St. Hillaire & Sons, Inc., 509 Main St., Gardner, Mass., LB **$698,001,** HOSPITAL expansion, LEOMINSTER, MASS. Leominster Hospital, Hospital Rd., Leominster, Mass. Bids Aug. 6. CD 7/20.

▲ **Thomas O'Connor & Co., Inc.,** 238 Main St., Cambridge, Mass., CA Est. **$1,000,000,** MANUFACTURING PLANT, NORWOOD, MASS. Raytheon Mfg. Co., Foundry Ave., Waltham, Mass. Cabot, Cabot & Forbes Co., 60 State St., Boston, Mass. engr. Bids July 27. CD 7/17.

▲ **Danyel Sages,** Cos Cob, Conn., Owner Builds, **$1,960,000,** 70 HOUSES, Bible St., COS COB, CONN.

▲ **Twin Hills of Groton, Inc.,** 764 Longhill Rd., Groton, Conn., Owner Builds, **$1,700,000,** 170 HOUSES, "Twin Hills" Second Section Poquonock Rd., GROTON, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲† **Md., Andrews Air Force Base**—HANGAR, etc.—On Or About 9/15—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., hangar, maintenance, organization (CRT 3 & 4) incl. utilities and site imprvs., ENG-49-080-60-6-(6). CD 6/2.

BUILDINGS—BA

▲ **N. Y., Brooklyn**—SCHOOL—BA 9/3—Supt. School Bldgs., Bureau Contr., 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical and lighting fixtures P. S. 274, Koscuisko St. and Bushwick Ave. $2,237,502. Plans deposit $25 for general, $10 each for mechanical trades. Extended date. CD 7/6.

▲ **N. Y., New York**—SCHOOL—BA 9/10—Bureau Supt. School Bldgs., Bd. Educ., 4th Fl., 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating and electrical work and lighting fixtures P. S. 128, Audubon Ave. between 168th and 169th Sts., Manhattan Boro. Plans deposit $25 general, $10 each for mechanical trades. CD 5/13.

▲ **N. Y., New York**—HOUSING—BA 9/15—New York City Housing Auth., 299 Broadway, Zone 7 (1) fdns. and general constr. (2) heating and ventilating (3) electrical work (4) plumbing (A) Martin Van Buren Houses (Proj. No. NYC-30) Trinity Ave., E. 161 St., E. 163rd St. (B) Forest South Houses (Proj. No. NY-5-31) Tinton Ave. E. 161 St., E. 163rd St. (C) for combination of both Projects NYC-30 and NY-31, Bronx Boro. Plans deposit $75. Extended date. CD 6/23.

▲ **N. Y., New York**—SCHOOL—BA 9/15—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, general contract, heating, and ventilating, electrical work and lighting fixtures for addn. to and modernization existing P. S. 23, E. 165th St. between Union and Tinton Aves., Bronx Boro. Plans deposit $25 general, $10 each for mechanical trades. CD 5/16/57.

HEAVY CONSTRUCTION—LB & CA

▲ **Emerson Garden Electric Co., Inc.,** 485 Lexington Ave., and **Day & Zimmermann, Inc.,** 500 5th Ave., New York, N. Y., CA **$1,625,593,** six bldgs., Niagara Switchyard, Niagara Proj. N-21, NEW YORK. New York State Power Auth., The Coliseum, 10 Columbus Circle, New York 19. N. Y. CD 8/3, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., N. Y.—**DeLillo Constr. Co., Inc.,** 100 E. Old Country Rd., Hicksville, N. Y. CA **$5,884,344,** 9 in. c. conc. pavement variable width 2.62 mi. b. conc. pavement 3.24 mi. misc. work 0.83 mi., 4 span ped. overpass 1 railroad sep. comp. I-beam 1 sp., 4 hy. seps. conc. rigid frame, 1 hy. sep. comp. I-beam (5.86 acc.) Long Island Expressway (Jericho Turnpike to South Oyster Bay Rd.) Proj. U-US862 (18) Dist. 10 FALLE 59-1, Nassau Co.,

N. Y.—**Colonial Asphalt Paving Corp.,** 22 W. 1st St., Mt. Vernon, N. Y., CA **$1,184,577,** 9 in. c. conc. pavement var. wide 1.06 mi. 9 in. c. conc. var. wide 0.05 mi. b. conc. pavement 0.42 mi. misc. work 1.1 mi. 3 hy. seps. comp. I-beams (0.97 acc.) Interstate Rte. Conn. 520 (Cross Westchester Expressway) Bloomingdale Rd. connection). Proj. I-1101(8) FICWE 59-1 Int. Tour Rte. 187, Westchester Co. Bids June 25. Awarded July 28. CD 6/26, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

C. **D. Murray Co., Inc.,** 310 Eckel Bldg., Syracuse, N. Y., CA **$1,019,174,** est. $1,148,000, b. conc. 6.01 mi. misc. work 0.02 mi. extend exist. conc. slab bridge 1 span 22 ft. prestressed concrete beam bridge 1 span 62 ft. Auburn-Owasco SH 614 Rte. 38A FARC 59-53 Proj. F-642(3) Cayuga Co. Bids July 16. CD 7/17, under LB.

▲ **Pa., King of Prussia**—BA 9/1—Upper Merion Twp. Sewerage Auth., Contr. I, general constr. sewage treatment plant and sewage pumping stations. Plans deposit $50; Contr. II, plumbing work for sewage treatment plant and sewage pumping stations. Plans deposit $25; Contr. III, heating (ventilating) work for sewage treatment plant and sewage pumping stations. Plans deposit 25; Contr. IV, electrical work for sewage treatment plant and sewage pumping stations. Plans deposit $25; contr. V, sanitary sewerage sys., appurtenances. Plans deposit $100. Total est. $2,200,000. Glace & Glace, Inc., 2771 Paxton St., Harrisburg, consult. engr. CD 7/1.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

T. **Edgie Russell,** Frederick, Md., CA **$669,456,** grading, drainage, surf. 3.438 mi. Rte. 32 from US 40 toward Dayton, incl. wid'n. 2 bridges and box culverts near Dayton, HO-292-3-720, Howard Co. Bids Jan. 27, awarded Aug. 6. CD 2/2, under LB.

BUILDINGS—LB & CA

▲ **Starbright, Inc.,** Dale Dr., West Orange, N. J., Owner Builds, **$3,000,000,** 200 HOUSES, Crestwood Place, Madison Twp., CLIFFWOOD BEACH, N. J.

J & H **Cosden Constr. Co., Inc.,** 76 B River Dell Rd., Oradell, N. J., Owner Builds, **$850,000,** 30 HOUSES adjoining Oradell Village East on Mackay Ave., ORADELL, N. J. Peter Butler, 172 State St. W., Englewood, N. J., archt.

William Lenz, 175 Westwood Ave., Westwood, N. J., Owner Builds, **$500,000,** 19 HOUSES in new section on Linwood Ave., Washington Twp., WESTWOOD, N. J.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — **Middle West**
Middle Atlantic — **Mississippi to Rockies**
South — **Far West**
PROPOSED WORK
Water Supply — **Public Buildings**
Sewers, Waste Disposal — **Mass Housing**
Bridges — **Commercial Buildings**
Streets & Roads — **Industrial Buildings**
Earthwork, Waterways — **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: .SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

▲ **Goodman, Guidera & Marron,** Lydecker Rd., Englewood, N. J., Owner Builds, **$1,750,000,** 11 story APARTMENT, Prospect and Central Aves., HACKENSACK, N. J. CD 6/2/58.

▲ **John McShain, Inc.,** 1750 North Olden Ave., Trenton, N. J., CA **$1,500,000,** COLLEGE AND FACULTY HOUSE, PRINCETON, N. J., St. Joseph's College, Lake Rd., Aqueduct, Princeton, N. J. Bids July 27. CD 8/5, under LB.

▲† **Norair Engineering Corp.,** 1118-22nd St.N.W., Wash., D. C., LB **$6,450,000,** Base Bid, (15 bidders), OFFICE BLDG., National Institutes of Health, BETHESDA, MD. General Services Admin., 7th and D Sts. S.W., Wash., D. C. Keyes & Lethbridge, 3 Dupont Circle, Wash., D. C., archts. Richard Collins & Assocs., 7705 Georgia Ave. N.W., Wash., D. C., engrs. Bids Aug. 6. CD 6/25.

† **Westinghouse Elec. Co.,** 150 Pacific Ave., Jersey City, N. J., LB **$601,908,** (5 bidders), ELEVATOR PLANT for Office, National Institute of Health. G. S.-R3-B-6453, BETHESDA, MD. General Services Admin., 7th and D Sts. S. W., Wash. 25, D. C. CD 3/26/57.

SOUTH

BUILDINGS—BA

N. C., Fayetteville—PLANT—BA 8/26—Cape Fear Development, c/o Arthur C. Jenkins, archt., 118 Mason St., mfg. plant. $750,000. Plans deposit $50. C. M. Hall Lamp Co., 1035 Hancock St., Detroit, Mich., lessee. CD 7/1.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Road Comm., Charleston, Zone 5,

V. N. Green & Co., Concrete Constr. & Central Asphalt Paving Co., 1640 4 Ave., Charleston 2, W. VA., CA **$2,917,688,** grading, draining 2.737 mi. Intersection Rte. 77 from North of Sec. 36 to Goldtown Interchange, Proj. I-77-3 (7) 117, Jackson and Kanawha Counties. Bids July 28, awarded Aug. 4. CD 7/31, under LB.

▲ **NORTH CAROLINA**—State Hy. Comn., Raleigh,

N. C.—**Blythe Bros. Co.,** Box 989, Charlotte, N. C., CA **$2,362,719,** fine grading, SABC 9 in. concrete pavement 10.02 mi. surf. Interstate Rte. 40 between Winston-Salem and Yadkin River, Proj. 8.17415 I-40-3 (16) 180, Davie and Forsythe Counties;

N. C.—**Thompson-Arthur Paving Co.,** Box 1197, Greensboro, N. C., CA **$1,324,259,** SABC, b. conc., base surf., structures and rest area 11.53 mi. surf. addnl. lane Interstate 85 between NC 54 and Efland, Proj. 8.15017 I-85-3 (13) 147, Alamance and Orange Counties. Bids July 28, awarded Aug. 7. CD 7/31, under LB.

▲† **Five Boro Constr. Co.,** 2 Lafayette St., New York, N. Y., CA **$2,769,013,** NIKE missile bases, Warner Robins Air Force Base, and Turner Air Force Base, GEORGIA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids May 29. CD 5/1.

▲ **Croft-Mullins Electric Co.,** Plo Nono Ave., Macon, Ga., and **Gulf Electric Constr. Co.,** Crestview, Fla., CA **$1,153,097,** electrical distribution sys. addn., TALLAHASSEE, FLA. City, City Hall, Tallahassee Fla. CD 8/5, under LB.

Mid South Constructors, Box 4593, Baton Rouge, La., LB **$752,800,** (3 bidders), Upper Bayou Anacoco spillway and control structure, Vernon Parish, LOUISIANA. Louisiana Dpt. P. Wks., Baton Rouge, La. Bids Aug. 3. CD 7/23.

▲ **Walters & Prater,** P. O. Box 478, Morristown, Tenn., CA Est. **$5,000,000,** natural gas lines, Union, Grainger, Anderson, Campbell and Claiborne Counties, TENNESSEE. Powell-Clinch Valley Utility Dist., c/o Sidney Davis, atty., Clinton, Tenn.

BUILDINGS—LB & CA

▲ **Phillips Investment Co.,** 308 W. Palmer St., Charlotte, N. C., Separate Contracts, **$2,000,000,** 255,000 sq. ft. MERCHANDISE MARKET, Independence Blvd., CHARLOTTE, N. C. Edward K. Sheppard & Assocs., 330½ N. Tryon St., Charlotte, N. C., archts. CD 11/17.

Combs, McDonald & Parks Constr. Co., 1141 Northbridge Dr., Charleston, S. C., Day Labor, **$600,000,** 30 RESIDENCES, Northbridge Subdivision Section No. 3, NORTH CHARLESTON, S. C.

▲ **C. A. Kendrick,** 128 W. Solomaon St., Griffin, Ga., CA Est. **$1,000,000,** SHOPPING CENTER, Forest Park, ATLANTA, GA. Clayton Plaza Shopping Center, Inc., 277 North Ave. NE, Atlanta, Ga. CD 7/2.

J. J. Black & Co., 575 Plum St. NW, Atlanta, Ga., CA **$632,176,** Lakeshore Drive HIGH SCHOOL, College Park, ATLANTA, GA. Fulton Co. Bd. Educ., 165 Central Ave., SW, Atlanta, Ga. CD 7/1, under LB.

▲ **Daniel Constr. Co., Inc.,** 429 N. Main St., Greenville, S. C., CA bleached sulphate paperboard and paper MILL, Nixon, AUGUSTA, GA. Continental Can Co., Robert Gair Div., 100 E. 42 St., New York 17, N. Y. Total cost **$40,000,000.** CD 1/19;
Babcock & Wilcox, 161 E. 42 St., New York, N. Y., CA 2 boilers, power and bark burning unit and kraft type black liquor recovery boiler (Augusta, Ga.).

(Continued on page 94)

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(Continued from page 91)

▲ **S. S. Jacobs Co.**, Independent Life Bldg., Jacksonville, Fla., CA, CONVERTING PLANT, ST. MARY'S, GA. Gilman Paper Co., sub. Kraft Bag Corp., 630 5th Ave., New York, N. Y. Ketchum & Sharp, 227 E. 44th St., New York 17, N. Y., archts. CD 11/26/51.

▲ **Peacock Constr. Co. & A. C. Samford, Inc.**, P.O. Box 1229, Albany, Ga., CA $1,106,684, HOSPITAL, SANDERSVILLE, GA. Washington County Hospital Auth., Sandersville, Ga. Bids July 7, awarded Aug. 6. CD 7/13, under LB.

Cal Kovens Constr. Corp., 1770 Bay Rd., Miami Beach, Fla., CA $622,000 (9 bidders), CONVENTION HALL, 3515 S. Ocean Dr., HOLLYWOOD, FLA. Diplomate Hotel Corp., 3515 S. Ocean Dr., Hollywood, Fla. Bids July 24. CD 7/21.

▲ **Frank J. Rooney, Inc.**, 5880 NE 4 Ave., Miami, Fla., CA $1,000,000, RETAIL STORE, Washington and Bahia Sts., SARASOTA, FLA. Sears, Roebuck & Co., First National Bank, Sarasota, Fla. Bids July 16, awarded Aug. 5. CD 7/24, under LB.

▲ **J. S. Stephens & Sons**, 902 Rome Ave., Tampa, Fla., LB $1,527,726 (18 bidders), LIBRARY CLASSROOM, University of South Florida, TAMPA, FLA. State Bd. Control, Tallahassee, Fla. Bids Aug. 5. CD 7/7.

† **Wehr Constr., Inc.**, 2127 S. Floyd St., Louisville, Ky., CA $704,000, Proj. Ky-58-C-FED 2-B-8, HIGH SCHOOL, FORT KNOX, KY. Housing & Home Financing Agency, 905 Hoffman Bldg., Louisville 2, Ky. Bids Apr. 30, awarded June 24. CD 5/5, under LB.

▲ **Enro Shirt Co.**, 1010 S. Preston St., Louisville, Ky., Separate Contracts, Approx. $1,000,000, 1 story, 120,000 sq. ft. aluminum, concrete MANUFACTURING PLANT, 14,400 sq. ft. OFFICE, LOUISVILLE, KY. Fink & Zwecker, 680 W. Peachtree St., Atlanta, Ga., engrs. Bids July 10.

▲ **Boone Contg. Co.**, 3rd National Bank Bldg., Nashville, Tenn., CA $1,252,600, remodeling addnl. OFFICE space and FACADE for bldg., 9th and Berryhill, NASHVILLE, TENN. Baptist Sunday School Bd., 127-9th Ave. N., Nashville, Tenn. Hart, Freeland & Roberts, 3rd National Bank Bldg., Nashville, Tenn., archts. Awarded July 30.

MIDDLE WEST

BUILDINGS—BA

▲ **O., Massillon** — SCHOOL — BA 8/28 — Tuslaw Bd. Educ., RD 2, high school. Plans deposit $100. Firestone & Motter, 1412 Cleveland Ave. N., Canton, archt. CD 11/12.

▲ **Ill., Chicago**—APARTMENT—BA 9/1—Chicago Housing Auth., Rm. 1500, 608 S. Dearborn St., Zone 5, complete general construction CHA Proj. Ill. 2-36, four 14 story apartments, garage, related utility and site work East 38th St. and South Langley Ave. Plans deposit $75. L. R. Solomon & Assoc., and John D. Gordwell, 61 W. Superior St., Zone 10, archts. CD 8/9/57.

▲ **O., Westerville**—SCHOOL—BA 9/1—Bd. Educ., high school. Plans deposit $30. McLaughlin & Keil, 500 Dominion Bldg., Lima, archts. CD 11/12.

▲ **Wis., Oshkosh**—SCHOOL—BA 9/1—Bd. Educ., Oshkosh, high school. $3,500,000. Extended date. Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., archts. CD 8/7.

Wis., Glenwood City—SCHOOL—BA 9/3—Joint School Dist. No. 1, high school. $700,000. Plans deposit $25. E. F. Klinger & Assocs., Inc., 121½ W. Grand Ave., Eau Claire, archt.-engr. CD 2/19.

▲ **O., Toledo**—SCHOOL—BA 9/10—Oregon Local School Dist., 5721 Seaman Rd., Junior High School. $2,000,000. CD 7/17.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Dpt. Bldg., Columbus, O.—**Ferguson & Edmondson Co.**, 408 Keystone Bldg., Pittsburgh, Pa., CA $2,431,877, Proj. 304, Type T-35 on B-70 and structures, 1.631 mi. SR 7, Section 16.10 U-431(11), City of Steubenville, Jefferson Co.;

O.—**Chapin & Chapin Inc.**, Rte. 20, E, Norwalk, O., CA $1,022,242, Proj. 318, Type T-35 on B-20 and structure, 1.911 mi. USR 422, Section 8.90, Auburn and Troy Twps., Geauga Co.;

O.—**The Murray Constr. Co.**, 316 W. Emmitt Ave., Waverly, O., CA $689,908, Proj. 312, Type T-35 and structure 3.674 mi. SR 28, Sections (6.84-9.91) Goshen Twp., Clermont Co. Grand total $4,144,027. CD 7/30, under LB.

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis,

Ind.—**DeBolt Constr. Co., Inc.**, Hawkins Rd., Richmond, Ind., CA $1,077,017, est. $1,288,034, 3 steel beam and rein.-con. girder spans over SR 121 in Interstate Rte. 70, NE of Richmond, also, 5 continuous steel beam and rein.-con. girder spans over East Fork of East Fork of Whitewater River, Interstate Rte. 70, E. of SR 121, also, 3 continuous steel beam spans over East Fork of East Fork of Whitewater River on Co. Rd. (Hayes-Arboretum Rd.), E. of SR 121, also, 3 continuous steel beam spans over Penn. R.R. on Interstate Rte. 70, W. of Ohio State Line, SE of SR 121, Contr. 4728, Greenfield, Wayne Co. Bids June 30. Awarded July 16.

Ind.—**R. L. Schutt Co., Inc.**, 611 N. Park, Indianapolis, Ind., CA $757,305, est. $875,296, 10 continuous steel beam spans over Muscatatuck River, NW of SR 256, Contr. 4685, Seymour, Scott and Jackson Counties.

Ind.—**Muncie Paving Co.**, Middletown Park, Muncie, Ind., CA $171,910, est. $191,136, 3 rein.-con. girder spans over Buck Creek, S. of Muncie (relocation of N-S Co. Rd. just S. of Hoyt Ave.), Contr. 4737, Greenfield, Delaware Co. Awarded July 23. Grand total $2,006,232. CD 7/8, under LB.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis, Zone 4,

Ind.—**J. S. Sweet Co., Inc.**, Cambridge City, Ind., CA $616,611, est. $737,639, 7 continuous steel beam and rein.-con. girder spans over Big Blue River, SE of SR 9, N. of Shelbyville, also, 4 continuous steel beam and rein.-con. girder spans over Interstate Rte. 74 on Co. Rd. (Knightstown Rd.), SE of SR 9, N. of Shelbyville, Contr. 4599, Shelby Co. Bids Mar. 26. Awarded July 21;

Ind.—**Smith & Johnson, Inc.**, 1799 Kentucky Ave., Indianapolis, Ind., CA $619,173, est. $696,556, 4 continuous steel beam spans over present US Rd. 52 on Interstate Rte. 65, S. of Royalton, NW of Boone-Hendricks County Line, Crawfordsville, Contr. 4636, Boone Co. Awarded July 13. CD 4/3, under LB.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Krug Excavating Co., 11835 Central Park Ave., Blue Island, Ill., CA $963,291, grade separations G. M. & O. R. R. under Ill. Rte. 93 near Chicago, Cook Co. Awarded Aug. 4. CD 7/7, under LB.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Ill.—**General Paving Co.**, 30 E. John, Champaign, Ill. CA $876,397, resurf. US 136 in Rantoul, Champaign Co.;

Ill.—**Charles Ind Co.**, R. R. 1, Rockford, Ill., CA $837,029, paving, resurf. US 20 between Rockford and county line, Winnebago Co.;

Ill.—**Sjostrom Paving Co.**, 1718 7th Ave., Rockford, Ill., CA $859,833, paving 3.81 mi. US 20 from west of Rockford, Winnebago Co. Grand total $2,573,259. Bids July 2, awarded July 14. CD 7/7, under LB.

† **F. D. Rich Co., Inc.**, 550 Summer St., Stamford, Conn. CA $868,658, automotive maintenance and squadron headquarters, Kinross Air Force Base, ENG-20-064-59-92, KINROSS, MICH. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids July 24. CD 7/8.

† **F. D. Rich Co., Inc.**, 550 Summer St., Stamford, Conn., CA $868,658, motor pool administration bldg., auto maintenance shop and utilities, heated auto storage bldg., auto refueling shop and squadron headquarters bldg. and utilities, K. I. Sawyer Air Force Base, MARQUETTE, MICH. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Awarded July 31. CD 9/9.

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BUILDINGS—LB & CA

▲ **Dunlop & Johnston, Inc.,** 19920 Miles Ave., Cleveland 28, O., CA (6 bidders) general contract central OFFICE and ACTIVITIES BLDG., CLEVELAND HEIGHTS, O. Jewish Community Center, 2049 E. 105th St., Cleveland, 6, O. Bids July 22, Total est. $1,200,000. CD 6/25;
Gorman-Lavelle Plumbing & Heating Co., 2341 E. 22nd St., Cleveland 15, O. CA (8 bidders) heating, ventilating and plumbing contract central OFFICE and ACTIVITIES BLDG. (Cleveland Heights, O.);
Max Oster Electric Co., 1428 Lakeview Rd., Cleveland 12, O., CA (5 bidders) , electrical contract, OFFICE and ACTIVITIES BLDG. (Cleveland Heights, O.)

▲ **Shives & Bradstock,** 100 E. Broad St., Elyria, O., Own Forces, $1,000,000, 63 HOMES, Cascade No. 3, ELYRIA, O.

F. X. Minnigan, Inc., 14 Bates St., Dayton, O., LB $675,900, general contract WOMENS HALL NO. 3 addn., Miami University, OXFORD, O. State Dpt. P. Wks., State Depts, Bldg., Columbus, O. Bids Aug. 4. CD 7/8.

▲ **Eichleay Corp.,** 33 S. 19 St., Pittsburgh, Pa., CA, fdn. for ANNEALING LINE NO. 2, Tin Mill, Indiana Harbor Works, EAST CHICAGO, IND., Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O. CD 1/5;
Bethlehem Steel Corp., Olive Bldg., Pittsburgh, Pa., CA, buildings, (East Chicago, Ind.);
Aetna Standard Engineering Co., Frick Bldg., Pittsburgh, Pa., CA, annealing line equipment, (East Chicago, Ind.);
General Electric Co., River Rd., Schenectady, N. Y., CA, furnace and electrical work, (East Chicago, Ind.).

W. W. Spurling Constr. Co., Inc., 5007 New Haven Ave., Fort Wayne, Ind., CA $652,711, general contract WARD BLDG. A, Fort Wayne State School, Parker Place, FORT WAYNE, IND. Dir. P. Wks. & Supply, 301 State House, Indianapolis, Ind. Bids June 18. CD 6/8.

Barmac Constr. Co., Chester, Ill., CA $855,000, 64,178 sq. ft. HIGH SCHOOL addn., CARBONDALE, ILL. Community School Dist. 165, Bd. Educ., Carbondale, Ill. Bids July 21. CD 7/2.

Hautz & Oren, Inc., 406 W. Jefferson St., Effingham, Ill., CA Est. $950,000, 139,250 sq. ft. ranges and laundry equip. FACTORY ADDN. EFFINGHAM, ILL. Norge Div., Borg-Warner Corp., Merchandise Mart, Chicago 54, Ill. CD 7/9.

▲ **George A. Fuller Co.,** 111 W. Washington St., Chicago, Ill., CA $16,000,000, LA SALLE-JACKSON OFFICE BLDG., CHICAGO, ILL. National Property, Inc., 200 S. Michigan Ave., Chicago, Ill. A Epstein & Sons, 2011 W. Pershing Rd., Chicago, Ill., archts. CD 1/17/57.

A. A. Ross Constr. Co., 300 W. Washington St., Chicago 6, Ill., CA Est. $875,000, 2 story, 25 x 75 ft., 20 x 40 ft., 55 x 90 ft., brick GYMNASIUM AND PHYSICAL TRAINING bldg., DES PLAINES, ILLL. Young Mens Christian Assn., 19 S. LaSalle St., Chicago, Ill. Bids July 24. CD 7/24.

M. H. Wolfe & Co., 2201 Adams Ave., Granite City, Ill., CA $785,550, 1 story, 70 x 195 ft. and 49 x 101 ft. Harris SCHOOL, 1 story, 72 x 180 ft. and 20 x 75 ft. Blair SCHOOL, MADISON, ILL. Madison Community School Dist. 17, Bd. Educ., 1704 4th St., Madison, Ill. Awarded July 23. (Correction—contractors name and address). CD 7/31.

Chas. D. Smith & Son, Hy. 23, Fond du Lac, Wis., CA $850,020, general contract INFIRMARY, KING, WIS. State Dpt. Veterans Affairs, Madison, Wis. Bids July 22. CD 8/6, under LB.

▲ **Bryant & Detwiler,** 2110 Penobscot Bldg., Detroit 26, Mich., CA Est. $3,500,000, 15-20 story CO-OPERATIVE APARTMENT HOUSE, DETROIT, MICH. Citizens Redevelopment Corp., 2019 Penobscot Bldg., Detroit, Mich. Meathe-Kessler Assoc., 15318 E. Jefferson, Grosse Pointe, Mich., archts.

▲ **Darin & Armstrong, Inc.,** 2041 Fenkell Ave., Detroit 38, Mich., CA $1,040,000, SCHOOL addn., DETROIT, MICH. Merrill-Palmer School, 71 E. Ferry, Detroit, Mich. O'Dell, Hewlett & Luckenbach, 950 Hunter Blvd., Birmingham, Mich., archts. CD 4/19/57.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲ **Tex., Dallas**—BA 8/31—City, City Hall, raw water pump station South Fork of Sabine River, $1,100,000; access road, $100,000, 9 mi. N. W. Wills Point. Forrest & Cotton, Praetorian Bldg., engrs. CD 9/4/56.

▲† **Mont., Glasgow**—HOSPITAL—BA 9/24—U. S. Eng., City-County Airport, Walla Walla, Wash., 1 story, 43,000 sq. ft., rein.-con., steel frame hospital, Glasgow Air Force Base, ENG-45-164-59-51. $1,930,000. Plans deposit $200. Extended date. CD 7/15.

BUILDINGS—BA

▲ **Okla., Tulsa**—SCHOOL—BA 9/8—Bd. Educ., 400 S. Cincinnati, Eli Whitney Junior High School, $1,250,000. Plans deposit $25. Hugh Humphries, Midcontinent Bldg., archt. Extended date. CD 7/10.

Mo., Columbia—JOURNALISM—BA 9/10—Curators of University of Missouri, 116 Jesse Hall, journalism bldg. addn. $750,000. Marshall & Brown, 1016 Baltimore Ave., Kansas City, Mo., archts.-engrs. CD 2/1/56.

HEAVY CONSTRUCTION—LB & CA

† **Southern Constructors, Inc.,** P.O. Box 68, Rossville, Ga., CA $723,250, powerhouse and switchyard Installation Units 3 and 4, Table Rock Dam, White River, CIVENG-03-050-59-71, MISSOURI. U. S. Eng., P.O. Box 867, Little Rock, Ark. Bids July 14. CD 7/22, under LB.

† **H. Halvorson, Inc.,** 11 North 5th St., Grand Forks, N. D., LB $646,500, boat basin, shore line protection Stage I, Gavins Point Dam and Reservoir near Yankton, ENG-25-066-60-2, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids July 23. CD 7/10.

▲† **Western-Knapp Eng. Co., Div. Western Mfg. Co.,** 650 5th St., San Francisco, Calif., CA $5,064,170, power structures, intake superstructures consisting completion rein.-con. power intake control structures located above the dam in reservoir pool at upstream end of 7 power tunnels incl. (A) removal of dike, 113,000 cu. yd. (B) 45,900 cu. yd. concrete (C) 5,700,000 lb. reinforcing steel (D) 4,610 lin. ft. water stop (E) 423,000 lb. misc. metals (F) mechanical sys. (G) electrical sys., Oahe Reservoir Proj. near Pierre, ENG-25-066-59-142, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids July 23, awarded Aug. 3. CD 7/27, under LB.

▲ **KANSAS**—State Hy. Comn., Manhattan, Bids opened 8/6,

Kan.—**Freeto Constr. Co.,** Inc., Box 609, Pittsburg, Kan., LB $879,634 (15 bidders), substructure Bridge No. 16-81-2.2, Sta. 168 plus 27 (2 abutments and 29 piers), SP 16-81 K 1020 (3), Riley Co.;

Kan.—**J. A. Tobin Constr. Co.,** 3701 Rainbow Blvd., Kansas City, Kan., LB $1,553,060 (18 bidders), superstructure Br. No. 16-81-2.2, Sta. 168 plus 27, 100 ft. 138 ft. 27-184 ft. 138 ft. steel girder. SP 16-81 K 1020 (3), Riley Co. CD 7/16.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol 5, Oklahoma City, Bids opened 8/4,

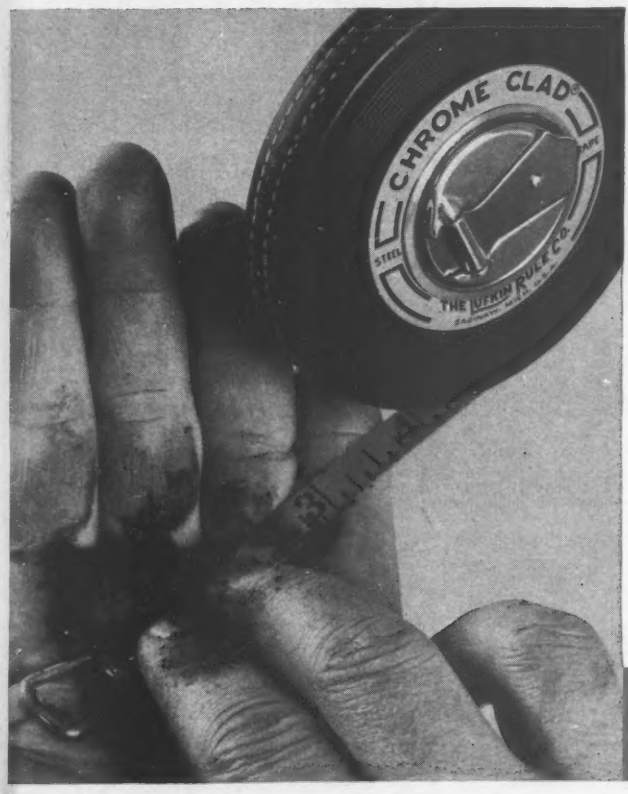
Okla.—**Johnson Constr. Co.,** Box 472, Edmond, Okla., LB $379,284, est. $454,205 (10 bidders), nine hy. grade separations structures I-35 north of Payne Co. line near Red Rock, Noble Co.; LB $659,482, est. $889,235 (9 bidders), nine grade separation structures and two bridges I-35 north and west of Perry, Noble Co.;

Okla.—**Jones & Phillips,** El Reno, Okla., LB $479,072, est. $569,219 (7 bidders), four grade separation structures, four bridges I-40 east of Hydro, Caddo Co.;

Okla.—**Moore Bridge Co.,** Box 907, Ada, Okla., LB $537,337, est. $645,710 (9 bidders), ten grade separations, two bridges I-35 north of Noble County line, Kay Co. CD 7/22, under Streets and Roads.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol 5, Oklahoma City, Bids opened 8/4,

Okla.—**Johnson Constr. Co.,** Box 472, Edmond, Okla., LB $533,898, est. $662,407 (9 bidders), grading,



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Okla.—Broce Constr. Co., Box 521, Woodward, Okla., LB $1,403,652, est. $1,403,697 (9 bidders), stab. aggreg. base, b. conc. surf. 6.22 mi. I-35 (4 lane) north of the Noble-Payne County line, Noble Co.;

Okla.—Pettigrew Constr. Co., 1716 Hendricks Blvd., Fort Smith, Okla., LB $549,991, est. $772,427 (8 bidders), grading, draining 6.355 mi. I-40 (4 lane) east of Hydro, Caddo Co.;

Okla.—Ben Haskins Constr. Co., Cordell, Okla., LB $475,171, est. $570,253 (7 bidders), grading, draining 7.921 mi. I-35 west of Red Rock, Noble Co.

▲† Browning Constr. Co., 903 Basse Rd., San Antonio 6, Tex., CA $1,674,830, est. $1,681,327, Scheds. 1 and 2, Nike Hercules Facilities, Dyess Air Force Base, ENG-41-443-59-57, ABILENE, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. CD 6/18, under LB.

▲† U. S. Eng., 616 S. Boston St., Tulsa, Okla., rejected bids June 17, Nike-Hercules Facilities (15 bldgs. and other work at each of 2 sites) Pantex and Canyon, Amarillo Air Force Base Defense area, ENG-34-066-59-67, AMARILLO, TEX. LB $1,743,315. Project cancelled. CD 6/25, under LB.

▲ U. S. Eng., Box 1600, Fort Worth, Tex., rejected bids June 23, Nike-Hercules Facilities Sheppard Air Force Base Defense area, ENG-41-443-59-58, WICHITA FALLS, TEX. LB $721,704, Site SH 20, LB $695,542, Site SH 70. Project cancelled. CD 7/23, under LB.

† Nilson-Smith Constr. Co., 800 2nd S., Great Falls, Mont., CA $625,897, paving, lighting and runway extensions Malmstrom Air Force Base, GREAT FALLS, MONT. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. CD 7/2, under LB.

BUILDINGS—LB & CA

▲ J. Leck Constr. Co., 322 West 61st St., Minneapolis, Minn., LB $1,000,000 (6 bidders), PARKING RAMP, Fifth St. and 2nd Ave. S., MINNEAPOLIS, MINN. LaSalle Realty Co., First National Soo Line Bldg., Minneapolis, Minn. Bids Aug. 4. CD 7/29.

Standard Constr. Co., Inc., 600 First National Bank Bldg., Minneapolis, Minn., CA $799,231, NURSING HOME for the AGED, ST. PAUL. MINN. A. H. Wilder Foundation, 4th and Washhington Sts., St. Paul, Minn. Bids June 23. CD 7/1, under LB.

G. E. Carlstrom Constr. Co., 202 100 F Bldg., Mankato, Minn., CA $600,000, general contract CHAPEL, ST. PETER, MINN. Gustavus Adolphus College, St. Peter, Minn. CD 10/24, under LB.

Gibson Constr. Co., 5865 Hampton Ave., St. Louis 9, Mo., CA Est. $630,000, five 3 story brick, concrete APARTMENTS, vicinity Parkside Dr. and Well Ave., ST. LOUIS, MO Parkside Apartments, c/o James S. Barnes, 5865 Hampton Ave., St. Louis 9, Mo. Raymond X. Grueninger, 7912 Bonhomme, Clayton 5, Mo., archt.

▲ Chemical Constr. Co., 525 W. 43rd St., New York, N. Y., CA total est. with equipment, $1,250,000, CHEMICAL PLANT, Hy. No. 10, LAWRENCE, KAN. The Cooperative Farms Chemical Assn., Lawrence, Kan.

▲ Rex D. Kitchens Constr. Co., Box 3295, Austin, Tex. CA Est. $1,962,000, Phase 1, 35 store units SHOPPING CENTER, AUSTIN, TEX. Capitol Plaza Shopping Center, 802 Capitol National Bank Bldg., Austin, Tex. CD 5/7.

Allen Bros. Constr. Co., 3536 Walker St., Memphis, Tenn., CA Est. $765,000, 5 story, 100 unit MOTEL, Harwood and Jackson Sts., DALLAS, TEX. Owner, c/o Wm. W. Bond, Jr., archt., 3728 Lamar St., Memphis, Tenn. CD 8/10.

▲ Jansen Constr. Co., 1203 Powhattan St., Dallas, Tex., CA $1,249,000, 2½ story, 100-bed HOSPITAL, DALLAS, TEX. Stevens Park Osteopathic Hospital, 2909 Maple Ave., Dallas, Tex. Bids June 24. CD 7/8, under LB.

▲ Fluor Corp., Houston Club Bldg., Houston, Tex. CA Est. $2,000,000, DISTILLATE HYDROTREATER, at refinery, HOUSTON, TEX. Shell Oil Co., Shell Bldg., Houston, Tex. CD 12/27/56.

City, City Hall, San Antonio, Tex., Owner Builds, $650,000, electric transformer SUB-STATION, Castle Hills, SAN ANTONIO, TEX. CD 11/13.

Perhomco, Inc., 1360 W. Poplar St., San Antonio, Tex., Owner Builds, $412,500, 32 DWELLINGS, SAN ANTONIO, TEX. CD 7/29.

Pederson Constr. Co., 2925 Ronan Dr., Billings, Mont., CA $696,840, general constr. 5 story, bsmnt., 100x140 ft., rein.-con. frame OFFICE and STORE, BILLINGS, MONT. Yale Realty Co., c/o Orr Pickering & Assocs., archts., Fratt Bldg., Billings, Mont. Bids July 28, awarded Aug. 6. CD 8/5, under LB.

Lembke Constr. Co., P.O. Box 771, Colorado Springs, Colo., CA $658,856, 2 story SCIENCE AND INDUSTRIAL ARTS, ALAMOSA, COLO. Adams State College, Alamosa, Colo. Bids July 28, awarded Aug. 4. CD 8/4, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ Calif., Los Angeles—BA 8/31—Dpt. Water & Power, 316 W. 2nd St., Encino Reservoir inlet-outlet line, Unit 2, 15,422 ft. 60 in. pipe. $1,000,000.

▲ Calif., San Diego—BA 9/1—City, Civic Center, Miramar Dam. $1,500,000. CD 3/4/52.

▲ Wash., Seattle—BA 9/9—Bd. P. Wks., County-City Bldg., Zone 4, grade separation structures at West Dravus St. and south end of Ballard Bridge, and wid'n. 15 Ave. West, $1,650,000. Plans deposit $25. R. W. Morse, city engr. CD 11/13.

BUILDINGS—BA

Calif., Redwood City—SCHOOL—BA 9/1—San Mateo County, Courthouse, school for handicapped children near Belmont, $690,000. Plans deposit $25. E. L. Norberg, 407 Occidental Ave., Burlingame, archts. Wilsey & Ham, 111 Rollins Rd., Millbrae, engrs. CD 3/17.

HEAVY CONSTRUCTION—LB & CA

† IDAHO—Bureau P. Rds., P. O. Box 1559, Boise, P. Kiewit Sons Co., Idaho Falls, Idaho, CA $749,498, grading surf. 14 mi. Banks-Lowman Hy. F.H.P. 24-A4, B, Boise Co. Bids July 30. CD 8/6, under LB.

▲ UTAH—State Rd. Comn., State Capitol, Salt Lake City,

Gardner Constr. Co., Plum Creek Rd., Littleton, Colo., CA $1,153,403, 412.16 ft. concrete, steel overpass, 31st St. Ogden, Proj. F 037-1 (4), 2nd contract, Weber Co. Bids June 30. CD 7/6, under LB.

UTAH—State Rd. Comn. State Capitol, Salt Lake City, Strong Co., Box 228, Springville, Utah, CA $797,215, 4 in. plant mix bit. surf., one 123.68 ft. concrete steel bridge, U. S. 40 from Rooseveit easterly to Uintah River 7.014 mi. Proj. F 015-3 (2), & F 015-2(3) Uintah and Duchesne Counties. Bids June 30. CD 7/9, under LB.

▲ N. S. Shumway Constr. Co., 1702 W. Filmore St., Phoenix, Ariz., LB $2,698,274, (8 bidders), south feeder water main, incl. 9 mi. 54-in. pipe line from 64th St. and Thomas reservoir to Ninth St. and Polk, PHOENIX, ARIZ. City, Dept. P. Wks., City Hall, Phoenix, Ariz. Bids Aug. 4. CD 6/5.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento, Bids opened 8/5,

Calif.—Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB $607,627 (10 bidders), grading, surf. to widen from 2 to 4 lanes, Oak St. between Brundage Lane and 24th St. (State Sign Rte 178) in and near Bakersfield, VI-Ker-58,k141, L, BKd. A, Bkd, Kern Co.;

Calif.—L. B. Wells Constr. Co., P. O. Box 1311, Visalia, Calif., LB $217,184 (13 bidders), reconstr., widen to provide initial 2 lanes of future 4 lane divided hy. 4.1 mi. FAS Co. Rd. 568 (10th Ave.) between 0.3 mi. south of Flint Ave. and the Alcorn Branch of Kings River north of Hanford, VI-Kin-568, Kings Co.;

Calif.—Healy Constr. Co., 7350 Palmdale Blvd., Palmdale, Calif., LB $133,880 (10 bidders), grading, base material and surf. to complete reconstr. and widening FAS Co. Rd. 660 (Los Laureles Grade Rd.) between Carmel Valley Rd. and 1.5 mi. northerly, V-Mon-660, Monterey Co. CD 7/10.

▲ Engineers Limited Pipeline Co., 1631 Beverly St., Los Angeles, Calif. CA Est. $1,200,000, 14.4 mi. 24 in. natural gas transmission lines east of Moreno to Perris-Winchester area, Riverside Co., CALIFORNIA. Southern Counties Gas Co., 810 S. Flower St., Los Angeles, Calif. CD 11/26.

Matich Bros. Corp., Box 390, Colton, Calif. LB $817,043, (7 bidders), Runway 25-L 7R reconstr., Los Angeles International Airport, LOS ANGELES CALIF. Dpt. Airports, 5800 Avion Dr., Los Angeles, Calif. Bids Aug. 4. CD 6/8/56.

Zarubica Co., 8550 Tujunga Ave., Sun Valley, Calif., OA $860,803, Valley Outfall Relief Sewer, Section D, Unit II, LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids July 22, awarded July 31. CD 7/28, under LB.

▲ Baugh Constr. Co., 922 Poplar Pl., Seattle, Wash. LB $922,936 (5 bidders), berthing facilities, VENTURA, CALIF. Ventura Port Dist., 684 E. Main St., Ventura, Calif. Bids Aug. 4. CD 6/8;

R. A. Bianchi, Box 602, Camarillo, Calif., LB $474,679, (5 bidders), grading, paving (Ventura, Calif.).

BUILDINGS—LB & CA

Staman, Fields & Co., 3500 N. Central St., Phoenix, Ariz., Owner Builds, $750,000, 39-unit APARTMENT, known as The Martinique, 3242 East Camelback, PHOENIX, ARIZ.

▲ H & J Constr. Co., 1722 E. Indian School Rd., Phoenix, Ariz., CA $2,000,000, MOTOR HOTEL "Ramada Inn" NW corner W. Franklin St. and Granada Ave., TUCSON ARIZ. Ramada Inn Corp. 3825 E. Van Buren, Phoenix, Ariz. Fred Guirey, 506 E. Camelback Rd., Phoenix, Ariz., archt. CD 6/1.

▲ H. & J. Constr. Co., 1722 E. Industrial School Rd., Phoenix, Ariz., CA $2,000,000, HOTEL, TUCSON, ARIZ. Southwest Hotels, Inc., Hotel Marion, Little Rock, Ark.

J. H. Sellen Constr. Co., 228 9 Ave. N., Seattle, Wash., LB $844,000, (8 bidders), 1 story, part bsmnt., 45,000 sq. ft., steel frame and frame HOSPITAL, BELLEVUE, WASH. Overlake Memorial Hospital Assn., c/o Jones, Lovegren, Helms & Jones, archts., Republic Bldg., Seattle 1, Wash. Bids Aug. 4. CD 7/8.

▲ H. Halvarson, Inc., E. 5218 Sharpe Ave., Spokane, Wash., LB $2,402,608 (4 bidders), 6 story HOSPITAL addn., SPOKANE, WASH. Deaconess Hospital, W. 733 4 St., Spokane, Wash. Bids Aug. 7. CD 7/20.

▲ Robert L. Wilson Co., 850-29th St., Oakland, Calif., LB $1,060,000 Base Bid, (7 bidders), 10,000 sq. ft., rein.-con. bsmnt., steel frame. CYCLOTRON BLDG. NO. 88, incl. 1300 sq. ft. shops, labs, offices, BERKELEY, CALIF. Bd. Regents, University of California, 2 Barrow Lane, Berkeley, Calif. Gerald M. McCue & Assoc., 2007 Hopkins St., Berkeley, Calif., archt. Bids Aug. 4. CD 11/26/58.

Fred S. Macomber Co., 4704 E. McKinley St., Fresno, Calif., CA $902,550, (10 bidders), HIGH SCHOOL, CORNING, CALIF. Corning Union High School Dist., Corning, Calif. Bids July 30. CD 7/2.

▲ B&R Constr. Co., 110 Market St., San Francisco, Calif., CA $1,940,600, steel frame, concrete block HIGH SCHOOL, Irvington, FREMONT, CALIF. Washington Union High School, 415 S. Main St., Box 606, Fremont, Calif. Falk & Booth, 16 Beale St., San Francisco, Calif., archts. CD 7/2, under LB.

Ironwood Homes, Inc., 2340 Fletcher Parkway, El Cajon, Calif., Owner Builds, $770,000, 55 DWELLINGS, Meadowcrest Dr., Swalero Rd., Ironwood Pl., LA MESA, CALIF.

▲ Leon Slavin, 470 South San Vicente Blvd., Los Angeles, Calif., LB $1,128,394 (11 bidders), Antelope Valley COLLEGE, Increment No. 2, LANCASTER, CALIF. Antelope Valley Union High School Dist., 100 W. Lancaster Blvd., Lancaster, Calif. Bids Aug. 6. CD 7/22.

Rossmoor Builders, Inc., 3402 Rossmoor Way, Los Alamitos, Calif., Owner Builds, $662,580, 40 DWELLINGS, Tract 3477, LOS ALAMITOS, CALIF.

▲ James I. Barnes Constr. Co., 1119 Montana Ave., Santa Monica, Calif., CA $3,810,000, 6 story, rein.-con. GRADUATE SCHOOL OF BUSINESS ADMINISTRATION at University, LOS ANGELES, CALIF. University of California, 405 Hilgarde Ave., Los Angeles, Calif. Bids July 7, awarded July 17. CD 7/10, under LB.

▲ Steed Bros., Box 350, Alhambra, Calif., CA $1,986,650, 2 story, rein.-con. UNDERGRADUATE HOUSES and COFFEE SHOP, PASADENA, CALIF. California Institute of Technology, 1201 E. California St., Pasadena, Calif. Bids July 28. Awarded Aug. 4. CD 10/1.

† Ekelin & Small Co., 1051 Tervin St., Salinas, Calif., CA $853,685, remodel U. S. POST OFFICE, SALINAS, CALIF. General Services Admin., 49-4th St., San Francisco, Calif. CD 6/26, under LB.

▲ O. E. Anderson Co., 1075 N. 10th St., San Jose, Calif., LB $1,408,623 (9 bidders), Pioneer HIGH SCHOOL, Kosser Ave., SAN JOSE, CALIF. San Jose Unified School Dist., 408 Almaden Ave., San Jose, Calif. Bids Aug. 4. CD 7/13.

Johnson, Drake & Piper, Inc., 9009 San Leandro St., Oakland, Calif., LB $789,800 (7 bidders), general constr. 1 and 2 story, 65,000 sq. ft. CAFETERIA on sloping site, California State Polytechnic College, W.O. 4160GC-42, SAN LUIS OBISPO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif.

Pacific Coast Builders, 1 South Park St., San Francisco, Calif., CA $737,450, 1 story, wood frame Bayside Intermediate SCHOOL, SAN MATEO, CALIF. San Mateo City Elementary School Dist., 117 N. San Mateo Dr., San Mateo, Calif. CD 7/15, under LB.

▲ Ralph T. Viola, 1626 Pine St., Oxnard Calif. CA $3,262,000, SENIOR HIGH SCHOOL NO. 2, VENTURA, CALIF. Ventura Union High School Dist., 295 S. Arcade Dr., Ventura, Calif. Bids July 29. Awarded Aug. 3. CD 8/5, under LB.

† Hawaiian Dredging & Constr. Co., Ltd., 1350 Ala Moana Ave., Honolulu, Hawaii, LB $694,000 (6 bidders), steel storage warehouse, Navy Base, GUAM. U. S. Navy, Office Director, Pacific Div. Bureau Yards & Docks, Bldg. 31, Nimitz Hy., Honolulu, Hawaii. G. H. Anderson & Assoc., 2615 S. King St., Honolulu, Hawaii, archts. Bids July 20. CD 7/6.

† Thomas T. Tanaka, 734 Umi St., Honolulu, Hawaii, CA $639,529, U. S. POST OFFICE, etc., WAILUKU, HAWAII. General Services Admin., 49-4th St., San Francisco 3, Calif. Bids July 14. CD 7/22, under LB.

CANADA

BUILDINGS—BA

▲ Sask., Yorkton—HOSPITAL—BA 8/27—Union Hospital Bd., Yorkton, 150-bed hospital addn., $1,297,704. Plans deposit $50. Black, Larson, McMillan & Assocs., Black Block, Regina, archts. CD 12/29.

Ont., Sudbury—HIGH SCHOOL—BA 8/31—Sudbury High School Bd., c/o Prince Charles School, 296 Van Horne St., Mining and Technical High School Extens. $700,000. Plans deposit $100. P. J. O'Gorman & Assocs., 4 Durham St. N., archts. Lewis, Lane & Co. Ltd., 127 Pine St., engrs. CD 7/20.

HEAVY CONSTRUCTION—LB & CA

▲ Tallman Constr. Co. Ltd., 600 Panet Rd., Winnipeg, Man. and Terminal Constr. Co. Ltd., Winnipeg, Man., CA $1,932,559, airport development, lengthening Runway 01-19 to 11,000x200 ft., Runway 11-29 to 10,200x200 ft., constr. ancillary taxiway at airport, EDMONTON, ALTA. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids June 26, awarded Aug. 4. CD 7/6, under LB.

▲ ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, Sterling Constr. Co. Ltd., Walkerville, Ont., CA $1,224,599, granular base, hot mix paving 10.4 mi. Hy. 40 (Contract 59-182) Chatham. Bids July 29, awarded Aug. 4. CD 8/4, under LB.

▲ H. J. McFarland Constr. Co. Ltd., Talbot St., Ficton, Ont., CA $1,282,077, water services, taxiways, roads, electrical distr., Royal Canadian Air Force Station, TRENTON, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Awarded Aug. 4. CD 6/29, under LB.

▲ Damien Boileau Ltee, 705 Beaumont Ave., Montreal, Que. CA Est. $1,000,000, SPORTS CENTRE, Pie IX Blvd., corner Bellechasse St. E., MONTREAL, QUE. Palestre Nationale, 841 Cherrier St., Montreal, Que.

(Continued on page 100)

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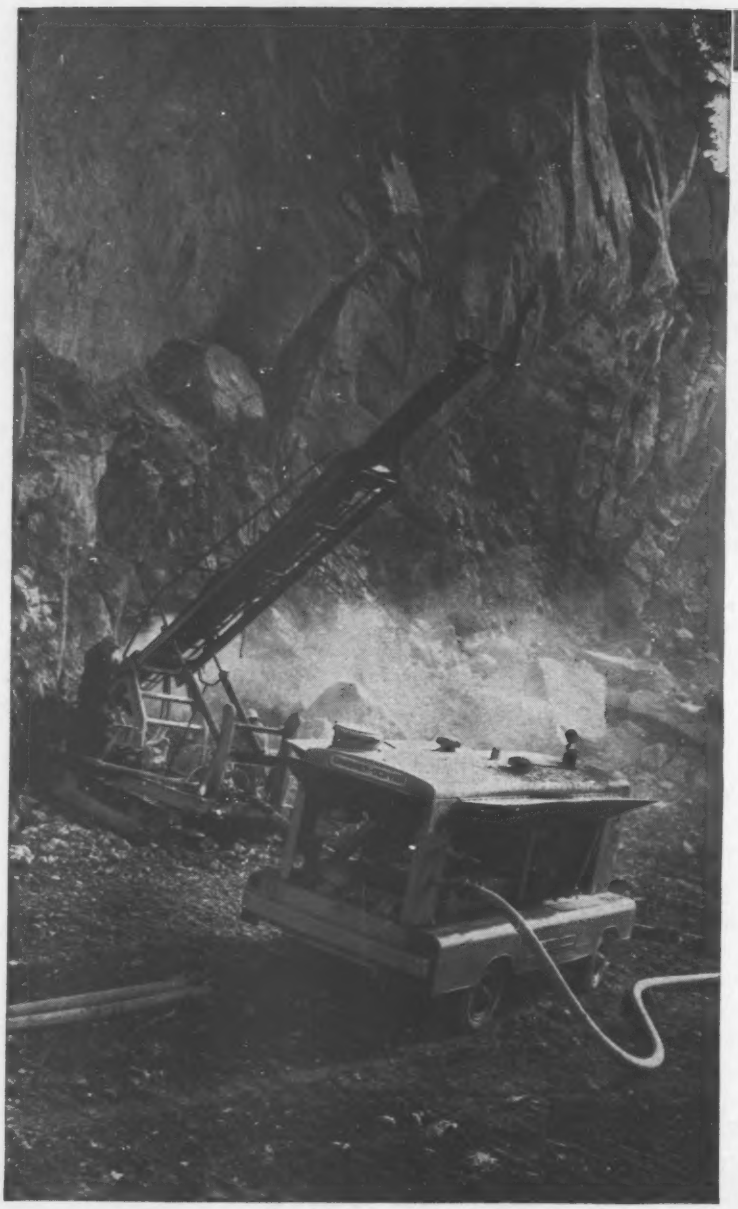

DAMS

DAMS
Mammoth Pool
Glen Canyon
Hartwell
Montgomery
Wishon
Priest Rapids
Ice Harbor
Courtright
Pelton
Dalles
Potomac River
Adaminaby
Navajo Dam
Table Rock
Dillon Dam
Eagle Gorge
Flaming Gorge
Rocky Reach

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EQUIPMENT

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San Francisco Freeway
Pennsylvania Turnpike Extension
Trans-Canada Highway
Snoqualmie Pass
West Virginia Tollway
Connecticut Turnpike
Donner's Pass
New Jersey Turnpike
Kansas Turnpike
Bangor By-Pass

TUNNELS

Hanabanalla
West Delaware
Swift Creek
Washington Aqueduct
Euçumbene-Tumut
Tooma-Tumut
Chicago Water Tunnel
Allegheny Sewer Tunnels
Jaybird Tunnel
Bowery Bay
Fremont Canyon
Boston Water Tunnels
Western Pacific Railway
Roberts Tunnel
Bingham Canyon
Pacific Gas and Electric
Glen Canyon Diversion and Access
Ontario Hydroelectric
Canyon Ferry
Clear Creek
Rampart Range
Mammoth Pool
Cherry Tunnel

PROJECTS

Lucin Cutoff
Calumet-Sag Channel
Chiese Hydroelectric
Snowy Mountain Hydroelectric
Chicago Filtration Plant
Noxon Rapids Hydroelectric
Beauharnois Canal
Little Falls
Lewiston Power
Ferrocarril-Chihuahua-Pacifico Railway
St. Lawrence Seaway
Kings River Project
Silver Falls Hydroelectric
Trans-Canada Pipeline
Feather River
Pacific Northwest Pipeline
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(Continued from page 96)

Dufresne & Boulva, 1275 Hodge St., St. Laurent, Que., archts. Beaulieu, Trudeau & Assocs., 6650 Darlington Ave., and Lalone & Valois, 615 Belmont St., both of Montreal, Que., engrs. Awarded July 31. CD 6/20/56.

HEAVY CONSTRUCTION—LB & CA

▲ **Poole Constr. Co. Ltd.,** 2402 2A St. S.E., Calgary, Alta., CA Est. $4,500,000, 10 story, steel, granite, brick OFFICE plus penthouse, CALGARY, ALTA. Canadian Fina Oil Ltd., 2nd Floor, Bamlett Bldg., Calgary, Alta. Rule, Wynn, Rule, 526 12th Ave. N.W., Calgary, Alta., archts. Awarded Aug. 3.

▲ **Cadillac Contg. (1959) Ltd.** 99 Avenue Rd., Toronto, Ont., CA Est. $1,200,000, 70,000 sq. ft. SHOPPING PLAZA, Shamrock Park, SAINT JOHN, N. B. Comp Investments Ltd., 1413 Peel St., Montreal, Que. Bregman & Hamann, 7 Adelaide St. E., Toronto, Ont., archts. Farkas & Barron of Canada Ltd., 7 Adelaide St., Toronto, Ont., engrs.

▲ **Angus Robertson Ltd.,** 57 Bloor St. W., Toronto, Ont., CA Est. $3,000,000, superstructure for BREWERY, west of junction of Hys. 401 and 27, TORONTO, ONT. Carling Breweries Ltd., 1047 Yong St., Toronto, Ont. Bids July 27. CD 7/10.

▲ **Joseph Turcotte, Inc.,** 990 Murray Ave., Quebec City, Que., CA Est. $2,000,000, INSTITUTION for deaf and dumb children, CHARLESBOURG, QUE. Minister of Social Welfare & Youth, Parliament Bldgs., Quebec City, Que. Maurice Bouchard, 376 King St., Quebec City, Que., archt. Dufresne & Mainguy, 915 W. St. Cyrille St., Quebec City, Que., engrs. Awarded Aug. 4. CD 6/25.

▲ **Bernier & Gagne Ltee.,** 460 Blvd. Boivin, Granby, Que., LB $1,020,000, SCHOOL, GRANBY, QUE. Catholic School Comn. of Granby, 385 Rue Principale, Granby, Que. Bids Aug. 4. CD 7/23.

▲ **D'Amours & Frere Ltee.,** 2633 Bourbonniere Ave., Montreal, Que., CA Est. $1,500,000, 60 bed HOSPITAL, Brownsburg Rd., LACHUTE, QUE. Bd. of Argenteuil Hospital, Lachute, Que. CD 6/18.

▲ **Anglin-Norcross Quebec Ltd.,** 892 Sherbrooke St. W. Montreal, Que., CA Est. $4,000,000, FACTORY and OFFICES, Pointe Claire, MONTREAL, QUE. Avon Products of Canada Ltd., 1010 St. Catherine St. W., Montreal, Que. Bids July 31, awarded Aug. 5. CD 7/27.

▲ **J. P. A. Normand, Inc.,** L'Islet, Que., CA Est. $1,000,000, 4 story, 70x350 ft., concrete, steel, stone PROVINCIAL HOUSE, RIVIERE DU LOUP, QUE. Rev. Soeurs de l'Enfant Jesus de Chauffailles, Riveriere du Loup, Que. CD 3/3.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **PANAMA**—Republic of Panama, Panama City, Vallarino & Arias, Via Ferbabdode Cordoba, 110 Panama City, Panama. CA $1,342,000. 12.5 mi. preliminary road work, Maria Chiquita to Portobelo.

† **REPUBLIC OF NICARAGUA**—Bureau P. Rds., Dpt. Commerce, Inter-American Hy. Div., General Services Bldg., Wash. 25, D. C. Bids opened 8/6,

Nello L. Teer Co., Trust Bldg., Durham, N. C., U. S. A. LB $893,382, (6 bidders), Rama Rd., 7 bridges Muham River to Piedras Grandes, Proj. R-3C, Nicaragua. CD 7/9.

BUILDINGS—LB & CA

▲ **Foster Wheeler Corp.,** 666-5th Ave., New York, N. Y., U. S. A. CA design, constr. and oversee construction REFINERY, PORTOBELO, PANAMA. Panama Petrochemical & Refining Co., Panama City, Panama. Total est. $40,000,000.

Frederick Snare Corp., 233 Broadway, New York, N. Y. U. S. A., made test borings (Portobelo, Panama).

FOREIGN

HEAVY CONSTRUCTION—LB & CA

▲ **Stewarts & Lloyds Ltd.,** Brooks House, Upper Brook, London W1, England, CA Est. $5,600,000, 270 mi. 16 in. oil pipe line from Nahorkatiya oil fields to refinery at Gauhati, INDIA. Oil India Privat Ltd., (Govt. of India & Burmah Oil Co.), Delhi, India.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Colo., Denver**—Bd. Water Comrs., 144 West Colfax, Denver, $40,000,000 bond election Oct. 6, Conduit 29, 11 mi. 78 in. pipe in place, $5,000,000; filter plant at Marston Lake $5,000,000; exten. Conduit 20 from present diversion to new diversion 8,000 ft. 90 in. pipe in place, Watertown, $1,500,000; diversion dam on South Platte, Watertown, $1,000,000; Conduit 28, Part 2, 79 in. diam. pipe in place from Hillcrest to Monaco and Montview, $1,000,000; exten. Conduit 27 Part 3, to 54 in. diam. from Hillcrest reservoir to Monaco and Montview Blvd., $1,000,000; channel changes and imprvs. from east portal of Roberts Tunnel towards Watertown on north Fork of Platte River, Grant, $500,000; pumping plant at Marston Lake to pump water from Marston filter plant to Hillcrest Reservoir near Denver, $1,000,000. R. B. McRae, Chief Engr., Denver Bd. Water Comrs., engr. CD 2/20.

▲ **Massachusetts**—Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, distr. lines from Shaft 9A City Tunnel (water), High Service to Medford Square, Low Service Mystic Valley Parkway, 13,000,000 ft. 48 in. pipe, Medford, $1,500,000; distr. lines Rte. 2 Park Ave., Arlington and Waltham St., Lexington, water from City Tunnel (36 in. pipe) Arlington and Lexington, over $500,000. Constr. 1960.

▲ **New Hampshire**—New Hampshire Water Resources Bd., Concord, water supply for Barrington, Dover, Durham, Greenland, Medbury, New Castle, Newington, Newmarket, Portsmouth, Rochester, Rollinsford, Rye, Somersworth, Strafford and Stratham. $12,375,000.

▲ **Tex., Midland**—City, City Hall, voted bonds July 28, WW sys. rehabilitation $250,000, water laterals $350,000, ground water storage tank, booster pump station $125,000, 6 water supply wells (field) $700,000, water mains $570,000. CD 7/22.

SEWERS, WASTE DISPOSAL

▲ **Calif., San Jose**—City, City Hall, sewage plant addn. $1,700,000. Brown & Caldwell, 66 Mint St., San Francisco, consult. engrs. Constr. 1960.

▲ **Calif., San Jose**—City, sewerage expansion. $15,000,000. To go ahead 1961.

Conn., Bethel—Town, Town Hall, sewerage sys., Bethel Center. $900,000. Bowe, Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs. CD 11/28.

▲ **Fla., Clearwater**—Bd. Comrs. Pinellas Co., 305 Haven St., sanitary sewer lines, Mullet Key Island, St. Petersburg. $1,000,000. Briley-Wild & Assocs., P.O. Box 3052, Daytona Beach, consult. engrs.

▲ **N. J., Lincoln Park**—Borough, Borough Hall, sewerage sys. $1,000,000. Frank Pandulla & Fred W. Gardner & Asso., 1455 Main Ave., Clifton, consult. engrs. CD 9/16.

▲ **Pa., Newcastle**—City, City Hall, sewage treatment plant and sanitary sewers. $3,000,000. Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago, Ill., consult. engrs. Bids about 1961.

▲ **Pa., Tarentum**—Upper Allegheny Sewage Auth., sanitary sewers, treatment plant, concrete pipe, 4 boroughs. $3,000,000. Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago, Ill., consult. engrs. Bids Nov. CD 3/11/53.

▲ **Ont., Niagara Falls**—City, City Hall, sewage disposal plant, Victoria Ave. and River Rd. $3,500,000. H. G. Acres & Co. Ltd., 1259 Dorchester Rd., consult. engrs. CD 7/20.

BRIDGES

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis, Zone 4,

Lake Co.—Cline Ave. Overpass and paving, Hammond and East Chicago, Ind., Cline Ave. and Ridge Rd. in Highland to US 20, incl. 4-lane highway-overpass to span Michigan Central & Indiana Harbor Belt R.R. $3,500,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Queens Co.—Woodhaven Blvd. Bridge, Union Turnpike to 74th Ave. $1,500,000. Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, Zone 17, consult. engrs. To go ahead 1959. CD 3/31/58.

▲ **Ont., Brantford**—City, City Hall, half mile long bridge and flyover, D'Aubigny Creek, Hy. 53, $1,500,000. G. H. Richards, City Hall, city engr.

STREETS AND ROADS

▲ **Ala., Mobile**—City, City Hall, streets and street paving, $1,600,000; 6-lane Broad-Beauregard Sts. from Spring Hill Ave. to Water St., $475,000; sidewalk paving $300,000.

Ala., Mobile—City, City Hall, concrete paving Broad St. through to Beauregard St. $800,000. Ewin Eng. Corp., P.O. Box 361, and Palmer & Baker Co., Inc., 2460 Government St., consult. engrs. CD 8/3.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Bronx Co.—1.9 mi. Bronx and Pelham Parkway, Bronx River Parkway to Bruckner Blvd., Bronx Boro, $15,000,000.

2.6 mi. Mosholu Parkway, Van Cortlandt Park to Park River Parkway, Bronx Boro, $13,000,000. Clarke & Rapuano, 830 3rd Ave., New York, Zone 22, consult. engrs. To go ahead after 1960.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Queens Co.—widening to 8 lanes 6.5 mi. Grand Central Parkway from Brooklyn-Queens Expressway to Kew Gardens; widening to 6 lanes 3 mi. Grand Central Parkway from Kew Gardens to Clearview Expressway, $22,000,000. Parsons, Brinckerhoff, Hall & Mcdonald, 165 Broadway, New York, Zone 6, consult. engrs. To go ahead 1960.

0.9 mi. Northern Blvd., Grand Central Parkway to Flushing River Bridge, $4,500,000. Blauvelt Engineering Co., 468 4th Ave., New York, Zone 16, consult. engr. To go ahead 1960.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Richmond Co.—4.5 mi. Willowbrook Parkway, Clove Lakes Expressway to Great Kills Park. $10,500,000. To go ahead after 1961. CD 5/29/44.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,

Richmond Co.—9.5 mi. Richmond Blvd. from Outerbridge Crossing to Clove Lakes Expressway $28,000,000. Shumavon & Buckley, 145 E. 32nd St., New York, Zone 16, engrs. To go ahead after 1961.

EARTHWORK, WATERWAYS

▲ **Colorado**—Ute (Colorado) Water Conservancy Dist., Grand Junction, water supply and irrigation project to bring water from Colbran Reservoir. $10,998,000. To go ahead March, 1951.

▲† **Illinois**—Montgomery Co. SCD, Hillsboro; City of Hillsboro and City of Litchfield, Watershed protection 192,365 acres, Shoal Creek, for Soil Conservation Service, $4,652,773.

AIRPORTS

▲ **Ala., Mobile**—RUNWAYS, etc.—City, City Hall, runways and aprons at airport, $1,000,000.

▲† **Calif., Muroc**—ROCKET TEST STAND—National Aeronautics & Space Admin., Edwards Air Force Base, 8 story, steel, concrete rocket test stand capable of handling two liquid-rocket engines with combined thrust of 3,000,000 lbs., Edwards Air Force Base. Aerojet General Corp., 6352 N. Irwindale Ave., Azusa, engrs.

▲† **Md., Andrews Air Force Base**—APRON OPERATIONAL, etc.—U. S. Eng., 1st and Douglas Sts. N.W., Wash. 25, D. C., plans by Whitman Requardt & Assoc., 1404 St. Paul St., Baltimore, Md., apron operational and road, over $5,000,000; plans by Turpin Wachter & Assoc., 1104 N. Charles St., Baltimore, electric sub-station, $500,000-$1,000,000.

▲ **Pa., Pittsburgh**—RUNWAY—Allegheny County, Courthouse, plans by Joseph Hoover, 333 Blvd. of Allies, Zone 22, East-West Runway Greater Pittsburgh Airport. $12,100,000.

PUBLIC BUILDINGS

▲ **Calif., Berkeley**—STORAGE, etc.—University of California, Admin. Bldg., off campus, storage bldg. $1,616,500; engineering bldg. $629,000, Berkeley Campus, University of California.

▲ **Calif., Chico**—GYMNASIUM, etc.—State Div. Architecture, 1120 N. St., Sacramento, men's gymnasium $1,500,000, addnl. boiler $80,000-$90,000, swimming pool $133,000, Chico State College, Dpt. Education.

▲ **Calif., Chino**—WARD LIVING UNIT—State Div. Architecture, 1120 N. St., Sacramento, ward living unit, Youth Training School, Dpt. Youth Authority. $2,700,000. CD 12/4.

▲ **Calif., Costa Mesa**—WARD BLDGS., etc.—State Div. Architecture, 1120 N. St., Sacramento, ward bldgs. $3,594,200, warehouse addn. $129,200, Fairview State Hospital, Dpt. Mental Hygiene. CD 1/10/58.

▲ **Calif., Davis**—PHYSICAL SCIENCES—University of California, Admin. Bldg., Berkeley, physical sciences, Unit No. 1, Davis Campus, University of California. $1,592,600.

▲ **Calif., Kerman**—SCHOOL—Kerman Union High School Dist., 2545 N. Madera, plans by Horn-Mortland & Clark, 2016 Merced St., Fresno, high school. $1,500,000. CD 2/1/57.

▲ **Calif., Long Beach**—ENGINEERING—State Div. Architecture, 1120 N. St., Sacramento, engineering bldg. $1,660,000, fine arts bldg. $1,559,500, administration bldg. addn. $523,700. Long Beach State College, Dpt. Education.

▲ **Calif., Petaluma**—SCHOOL—Petaluma School Dist., Admin. Bldg., 5th and B Sts., plans by Reynolds & Chamberlain, 3833 Piedmont Ave., Oakland, wood frame concrete slab Grant Elementary School. $2,000,000.

▲ **Calif., Sacramento**—GYMNASIUM, etc.—State Div. Architecture, 1120 N. St., women's gymnasium, $1,031,800, swimming pool $134,800, Sacramento State College, Dpt. Education. $134,800.

▲ **Calif., Sacramento**—HEADQUARTERS—State Div. Architecture, 1120 N. St., headquarters California Highway Patrol. $1,184,500. CD 12/4.

▲ **Calif., San Francisco**—CAFETERIA—State Div. Architecture, 1120 N. St., Sacramento, cafeteria addn. San Francisco State College, Dpt. Education. $1,000,000.

▲ **Calif., San Jose**—EDUCATION, etc.—State Div. Architecture, 1120 N. St., Sacramento, education bldg. $2,059,000, outdoor physical education facilities $735,500, enlarge steam services $106,030, electrical distr. sys. (Phase I) $108,800, San Jose State College, Dpt. Education.

▲ **Calif., San Luis Obispo**—FOOD PROCESSING, etc.—State Div. Architecture, 1120 N. St., Sacramento, food processing bldg. $1,412,600, corporation yard $500,000, library addn. $1,222,500, boiler addn. $91,300, site development $106,050, San Luis Obispo Campus, California State Polytechnic College, Dpt. Education.

▲ **Calif., Santa Barbara**—LIBRARY, etc.—University of California, Admin. Bldg., Berkeley, Library Unit 2, $1,415,400, Classroom and Office Unit 2, $1,006,000, Santa Barbara Campus, University of California.

▲ **Calif., Stockton**—PROFESSIONAL—State Div. Architecture, 1120 N. St., Sacramento, professional bldg. Stockton State Hospital, Dpt. Mental Hygiene. $1,142,900.

▲ **Colo., Aurora**—HOSPITAL—Aurora General Hospital Assoc., c/o Mrs. Wm. M. Martin, 719 Scranton Court, 100-bed hospital, $2,000,000.

▲ **Conn., Greenwich**—SCHOOL—Town, Town Hall, high school. $1,000,000.

▲† **D. C., Wash.**—RADIATION LABORATORY—Dist. P. Wks. Office, Potomac River Naval Command, M and 8 St. S.E., 1 story, rein.-con. hot cell, high level radiation laboratory, U.S. Naval Research Laboratory. $1,700,000. Vitro Corp. of America, 261 Madison Ave., New York 16, N. Y., engrs. CD 8/28/56.

▲ **Ga., Columbus**—CLASSROOM—Muscogee Co. Bd. Educ., 1200 Bradley Dr., plans by J. N. Pease & Co., 418 10th St., Columbus Junior College Classroom, $1,000,000. CD 6/26/50.

▲ **Hawaii, Honolulu**—UNIVERSITY ADDNS.—Territory of Hawaii, Territory Office, constr Health Research

(Continued on page 102)

Walter Ware, president and general manager, Tru-Mix Concrete, Inc., Portland, Oregon

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UNION OIL COMPANY OF CALIFORNIA 76

UNION OIL CENTER, LOS ANGELES 17, CALIFORNIA, U.S.A.

(Continued from page 100)

Institute Classroom Bldg. 2, $1,650,000; Classroom Bldg. 3, $1,650,000; Classroom Bldg. 4, $1,650,000; women's dormitory, $500,000; men's dormitory, $500,000; cafeteria, $750,000; Veterans Memorial Men's Dormitory Unit B, $437,000; Waahila Faculty Apartment, $620,000; military science bldg., $534,000; campus road drainage utilities, $570,000; swimming pool, $527,000, for University of Hawaii.

▲ **Hawaii, Wailuku Maui**—CONVENTION HALL, etc.—Territory of Hawaii, Territory Office, Honolulu, convention hall and gym. $6,000,000.

▲ **Ill., Chicago**—SCHOOL—Bd. Educ., 228 N. LaSalle St., plans by Furst Maher & McGrew, 626 Grove, Evanston, 3 story brick Mary Mapes Dodge ELEMENTARY SCHOOL, $1,250,000. CD 5/23/58.

▲ **Ill., Harwood Heights (Chicago 31, P. O.)**—SCHOOL—Bd. Educ., Community High School Dist. 234, 4600 N. Oak Park Ave., plans by Orput & Orput Assocs., Empire Bldg., Rockford, 2 story, 272 x 440 ft. brick, stone school, $1,700,000.

Ind., East Gary—SCHOOL—School Town of East Gary, 2295 Park Ave., plans by Wildermuth & Wildermuth, 527 Broadway, Gary, 1 story, 63,000 sq. ft., brick, structural steel high school addn. $900,000. Reynolds & Barich, 5001 Cleveland Ave., Gary, engrs. CD 4/24.

▲ **Mass., Cambridge**—SCHOOL—City, School Dpt., 1700 Cambridge St., plans by Hugh A. Stubbins Assoc., 806 Mass. Ave., elementary school, Linnaean St. $1,700,000. CD 7/21/58.

▲ **Mass., Framingham**—SCHOOL—Town, c/o Supt. Schools, Lexington St., plans by M. A. Dyer Co., 24 School St., Boston, elementary School, Water St. $1,000,000. CD 6/26.

▲ **Minn., Brainerd**—HOSPITAL—State Dpt. Admin. 19 State Capitol, St. Paul, completing administration bldg., $460,600; 4 patient bldgs. $2,609,400, at Brainerd State School and Hospital. CD 2/7/58.

▲ **Minn., Duluth**—APARTMENT—Housing & Redevelopment Auth., c/o A. C. Lucas, Jr., archt., 800 Alworth Bldg., 9 story apartment, 4th Ave. E. and 2nd St. $1,557,186.

▲ **Minn., Mankato**—DORMITORY—State College Bd., 41 Sherburne Ave., St. Paul, two 300 bed dormitory, State College. $2,600,000. May start constr. this fall. CD 7/26/57.

▲ **Minn., Winona**—SCIENCE—State Dpt. Admin., 19 State Capitol, St. Paul, science, $1,065,150 (Correction—owner-project). CD 7/13.

▲ **Nev., Reno**—CONVENTION HALL—City, City Hall, voted $4,500,000 bonds, convention hall.

▲ **N. J., Highlands**—SCHOOL—Highlands & Atlantic Highlands Regional High School, Highlands, high school, $1,200,000. CD 6/7/56.

▲ **N. J., Kinnelon**—HIGH SCHOOL—Bd. Educ., Emil Schmidlin, 50 Evergreen Place E., Orange, high school. $1,000,000.

▲ **N. J., Piscataway**—SCHOOL—Bd. Educ., Piscataway Twp., Junior High School, Academy St., $1,000,000; elementary school, Suttie Ave., $500,000; elementary school, Hillside Ave., $500,000.

▲ **N. Y., New York**—HOSPITAL—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Pomerance & Breines, 630 3rd Ave., Zone 17, and Katz, Waisman, Blumenkrantz, Stein & Weber, archts. assoc., 551 5th Ave., New York, 25 story hospital for Bellevue Hospital. $55,000,000 (no funds). Feld & Timoney, 60 E. 23rd St., Zone 10, engrs. CD 11/8/57.

▲ **N. Y., New York**—APARTMENTS—New York City Housing Auth., 299 Broadway, Zone 7, plans by Tippetts-Abbett-McCarthy-Stratton, 375 Park Ave., 2 and 3 story garden apartments, Boston Rd.-Secor Ave., Bronx Boro., NY-5-60 (Federal). $8,780,000.

▲ **N. Y., New York**—HOUSES—New York City Housing Auth., 299 Broadway, Zone 7, plans by Brown & Guenther, 1860 Broadway, Robert Fulton Houses, 9th and 10th Aves., W. 17th to W. 20th Sts., NY-5-53 (Federal) $16,800,000.

▲† **N. C., Cherokee**—SCHOOL—Bureau Indian Affairs, Dpt. Interior, C between 18th and 19th Sts., Wash., D. C., plans by McMinn, Norfleet & Wicker, 2828 Lawndale Dr., Greensboro, elementary-high school. $1,000,000.

▲ **O., Athens**—ARTS, etc.—Dpt. P. Wks., State Dpts. Bldg., Columbus, Arts Bldg., College Fine Arts, $1,400,000 (appropriated); remodeling gymnasium into classroom bldg., $550,000 (appropriated); rehab. heating plant, electric generating equip. addns., $350,000 (appropriated), all for Ohio University. CD 7/12/54.

▲ **O., Bowling Green**—ADMINSTRATION—Dpt. P. Wks., State Depts. Bldg., Columbus, administration bldg., $1,250,000 (appropriated); Fine Arts Bldg. addn., $409,200 (appropriated), Bowling Green State University.

▲ **O., Columbus** — PSYCHIATRIC INSTITUTE — State Dpt. P. Wks., State Dpts. Bldg., Columbus Psychiatric Institute & Hospital Wing for Dpt. Mental Hygiene & Correction. $1,225,000 (appropriated). CD 2/19/58.

▲ **O., Columbus**—UNIVERSITY ADDNS.—Dpt. P. Wks., State Depts. Bldg.,
Fine Arts Bldg. addn $1,214,000 (appropriated);
Botany and Zoology bldg. remodeling. $1,481,400 (appropriated);
Campbell Hall addn. $1,100,000 (appropriated);
Denny Hall extens., Mathematics Dpt.. $636,000 (appropriated);
Robinson laboratory remodeling, $806,300 (appropriated); underground utilities addns. $277,600 (appropriated); roadways, walks and pedestrain bridge. $239,600 (appropriated). Above work at Ohio State University.

▲ **O., Kent**—CLASSROOM—Dpt. P. Wks., State Depts. Bldgs., Columbus; classroom, $1,840,000 (appropriated); heating plant addn., $250,000 (appropriated), Kent State University.

▲ **O., Lebanon**—CORRECTIONAL INSTITUTION—Dpt. P. Wks., State Depts. Bldg., Columbus, plans by Bellman Gillette & Richards, 1600 Madison St., Toledo, Phase III, Lebanon Correctional Institution for Dept. Mental Hygiene & Correction. $5,000,000 (appropriated). CD 4/24/56.

O., Lisbon—COUNTY HOME—Comrs. Columbiana Co., Court House, bond election Nov. 3, county home. $989,000.

▲ **O., New Concord**—SCHOOL—Bd. Educ., bond election Nov. 3, high school, $1,100,000.

▲ **O., Oxford**—PHYSICAL EDUCATION—Dpt. P. Wks., State Depts. Bldg., Columbus, women's physical educ. bldg., Miami University. $1,233,000 (appropriated).

▲ **Okla., Oklahoma City**—CAPITOL OFFICE—State Bd. Affairs, Capitol, Zone 5, capitol office. $5,000,000.

▲ **Okla., Tulsa**—CIVIC ASSEMBLY CENTER—City, City Hall, plans by Edward D. Stone, 38 E. 65th St., New York, N. Y. and Murray, Jones & Murray, 4238 S. Peoria St., Tulsa, civic assembly center. $7,000,000. CD 3/11.

▲ **Tex., Laredo**—HOUSING—Laredo Housing Auth., Laredo, plans by Olin Boese & Assocs., T&P Bldg., Fort Worth, 100 housing units. $1,000,000. CD 10/3/56.

▲ **Tex., Odessa**—COURTHOUSE WING—Ector County, Comrs. Court, Courthouse, courthouse wing. $1,000,000.

▲ **Utah, Logan**—ENGINEERING—Utah State Bldg. Bd., 419 State Capitol, Salt Lake City, plans by Fred L. Markham, 35 N. University, Provo, 2nd phase engineering bldg. State University Applied Arts. $1,500,000. CD 8/6/57.

COMMERCIAL BUILDINGS

▲ **Calif., Palo Alto** — RADAR TELESCOPE — Stanford University, Communication & Propagation Institute and Radio Propagation Laboratory, Palo Alto, 15 story high radar telescope with 142 ft. parabolic reflector and radio transmitter, on campus.

▲ **Calif., Pasadena** — AERONAUTICS LABORATORY — California Institute of Technology, 1201 E. California St., plans by Wm. L. Pereira & Assocs., 1231 W. 5th St., Los Angeles, 5 story, 30,000 sq. ft. aeronautics laboratory, $1,050,000.

▲ **Conn., New Haven**—SHOPPING CENTER—Leonard L. Farber Co., Inc., 342 Madison Ave., New York, N. Y., plans by Charles H. Abramowitz, 52 Goffe Terrace, 120,000 sq. ft. "Amity Road Shopping Center", Amity Rd. $1,200,000. CD 7/29.

▲ **D. C., Wash.**—SCHOOL—Catholic University of America, 620 Michigan Ave. N.E., plans by Thomas Locraft & Assocs., 1518 P St. N.W., School of Engineering and Architecture, $1,300,000.

▲ **Ga., Atlanta** — APARTMENT — Elliott & Johnson, 1575 Brewer Blvd. S. W., plans by William R. Tapp, 110 Austin Ave., Marietta, apartment, Roswell Rd. $5,000,000.

▲ **Ill., Pontiac**—SHOPPING CENTER etc.—Atlas Building Co., LaSalle, shopping center, parking areas, Rte. 66 and Rte. 23, near city limits. $1,250,000.

▲ **Ind., Hammond**—DEPARTMENT STORE—A. H. Tapper, Inc., 3 story, bsmnt., 100 x 135 ft., brick department store, $1,000,000. J. C. Penny Co., lessee. Constr. in 1960.

▲ **Md., Baltimore**—SHOPPING CENTER—Food Fair Properties Inc., 33 N. Cameron, Harrisburg, Pa., plans by Lathrop Douglass, 518 5 Ave., New York 18, N. Y., mall type 50 stores shopping center between Joppa Rd. and Goucher Blvd., incl. Food Fair Super Market, Montgomery Wards. $6,000,000.

▲ **Mass., Newton**—APARTMENT, etc.—Mass Maloney Corp., 10 P. O. Square, Boston, Mass., plans by John Hans Graham, 2430 Penn. Ave. N. W., D. C., apartment and stores, Oak Hill. Over $1,000,000. Constr. 1959.

▲ **Minn., St. Louis Park**—APARTMENT—N. Moshou, 1724 James Ave. S., Minneapolis, three 6 story, 47-units each apartments, Highway No. 7 at Owatta Ave. $1,000,000.

▲ **Mo., St. Louis**—MOTEL—Motel DeVille Corp., 275 Union Blvd., Zone 8, plans by William Bond, Jr., 3728 Lamar Ave., Memphis, Tenn., 96 unit motel, northwest corner Lindell Blvd. and Taylor Ave. $1,000,000.

▲ **Neb., Fremont**—DORMITORY, etc.—Midland College, Fremont, plans by Homer H. Turner, 732 N. Park Ave. 77 men dormitory and dining hall, $450,000. CD 7/21; plans by Hemphill & Vierk, Suite 305, 116 N. 11th St., Lincoln, 3 story administration and classroom bldg. with 2 story auditorium section, $1,000,000. CD 2/1/55.

▲ **Neb., Omaha**—BUSINESS ADMINISTRATION—Creighton University, 2500 California St., plans by Leo A. Daly, 633 Ins. Bldg., business administration, $1,000,000.

▲ **N. J., Atlantic City**—APARTMENT, etc.—Bayview Island Development Co., 9800 Ventnor Ave., Margate, plans by J. Vaughn Mathis, Guarantee Trust Bldg., apartment, shopping center, residential development. $10,000,000. Constr. in early 1960.

▲ **N. J., Elizabeth**—APARTMENT—Kelbey Associates, 15 Prince St., Elizabeth, plans by Gerber & Pancani, 11 Commerce St., Newark, 61-unit apartment, Cherry St. $1,000,000.

▲ **N. J., Elizabeth**—APARTMENT—Lawrenceville Manor, Inc., c/o Joseph Kane, Esq., 15 Prince St., plans by Isadore Naftali, 312 High St., Newark, 8 story, 100-unit apartment, Jersey Ave. $2,000,000.

▲ **N. Y., New York**—RESIDENTIAL, etc.—Lutheran Seamen's Center, 6 Water St., Zone 4, 10 story residential and recreational center and adjacent 1-story chapel on 43.8 x 80 ft. site northeast corner Irving Pl. and Fifteenth St. $1,000,000. Still fund raising.

▲ **N. C., Winston-Salem**—SHOPPING CENTER—Reynolda Manor Shopping, Inc., 224 Melrose, plans by Stinson, Arey & Hall, 639 A W. 5th St., shopping center. $1,000,000.

▲ **S. C., Charleston**—RESEARCH CENTER—Medical College of South Carolina, Lucas and Calhoun Sts., research center. $1,000,000. CD 3/25/57.

▲ **Tenn., Kingsport**—MOTEL—Diversified Management Corp., 22 S. 2nd St., Memphis, 3 story King Motel, swimming pool, play park. $1,000,000.

▲ **Tex., Dallas**—DISPLAY AND TRADE CENTER, etc.—Fleetwood Square, Inc., c/o Edmund G. Peterson, pres., 4540 Lorraine Ave., 3 story, 150,000 sq. ft. concrete frame, bldg. products display and trade, $3,000,000, site area earthwork and drainage $75,000, Maple Ave.

▲ **Tex., Dallas**—STORE—A. Harris & Co., Main and Akard Sts., 2 story, 100,000 sq. ft. masonry store $1,010,000; three 1 story stores, $700,000; Royal Lane and Preston Rds.

▲ **Tex., Houston**—HOSPITAL—Southwest General Hospital, Dr. Bert G. Lindsey, trustee, 5200 Spruce St., Section 1, 75-bed general hospital unit $1,000,000, Section 2, general hospital unit (aged and convalescent) $1,250,000, near Bellaire, 10.3 acre site.

▲ **Tex., San Antonio**—OFFICE, etc.—Owner, c/o De Verne Reed Kittles, archt., 523 W. Hildebrand Ave., 3 story, penthouse, 100,000 sq. ft. office, swimming pool, $1,500,000, site earthwork (for office) $75,000; area paving and auto center, $90,000, Basse Rd. and San Pedro Ave.

▲ **Tex., Temple**—SHOPPING CENTER, etc.—Ed Korn Developer, c/o Sands Motel, plans by Vail E. Longsdon, 1st National Bank Bldg., shopping center $1,000,000, paved shopping center area and auto parking $100,000.

▲ **Utah, Provo**—MOTEL—Western Travel, Inc., c/o Ashworth Architects, archts., Box 566, 66-unit "Timpanac Motel", swimming pool, U.S. 189 and 12th North. $2,000,000.

▲ **Wash., Seattle**—APARTMENT—Bay Shore Cooperative Assn., c/o E. Teague, 4711 California Ave., plans by Waldron & Dietz & Assocs., 1411 4th Ave. Bldg., Settle, Zone 1, 9 story, rein.-con. apartment. $1,000,000.

▲ **Wis., Ashland**—CHAPEL, etc.—Northland College, 1411 Ellis Ave., plans by L. Monberg & Assocs., 815 57 St., Kenosha, chapel, fieldhouse, science, admin. bldg. $1,500,000.

INDUSTRIAL BUILDINGS

▲ **Ala., Guin**—PLANT—Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul, reflective tape mfg. plant addn. $1,250,000. To go ahead 1959.

▲ **Conn., Milford**—PLANT—Eversharp, Inc., 350 Fifth Ave., New York, N. Y., fountain pens and electric razor mfg. plant. $1,500,000.

▲ **Ill., Glenview**—ENGINEERING AND RESEARCH—Sigmode Steel Strapping Co., 2600 N. Western Ave., Chicago, plans by Hausner & Macsal, 104 S. Michigan Ave., Chicago, 84,000 sq. ft. engineering and research bldg. $1,700,000.

▲ **Minn., Golden Valley (P. O. Minneapolis)**—PLANT—Continental Baking Co., 1200 Third Ave. South, Minneapolis, 1 story plant, Wayzata Blvd. and Pennsylvania Ave. $1,000,000. Constr. 1960.

▲ **Miss., Vicksburg**—PLANT—U. S. Rubber Reclaiming Co., Walkowaik near William, Cheektowaga, N. Y., rubber recovery plant. $1,200,000.

▲ **N. J., Flemington**—POLYVINYL RESIN PLANT—Cary Chemicals, Inc., Ryders Lane, Milltown, polyvinyl resin plant addn., White House Rd. $2,115,000.

▲ **N. Y., Cheektowaga**—PLANT—U. S. Rubber Reclaiming Co., Walkowiak St. near William St., nylon tire recovery plant addn. $1,000,000.

▲ **O., New Concord**—DEPOT—General Electric Co., River Rd., Schenectady, N. Y., parts distribution depot, $3,000,000.

▲ **Tex., Beaumont**—ETHYLENE PLANT—Magnolia Petroleum Co., Subsidiary Socony Mobil Oil Co., Beaumont, 2nd stage, Ethylene Plant unit, $22,500,000. Constr. 1960, 3rd stage ethylene plant unit, $18,000,000, Contr. late 1960 or 1961.

▲ **Ont., Goderich**—PLANT—Sifto Salt Ltd., Goderich, modernizing evaporation plant. $1,000,000. A. P. Boutilier, c/o owner, engr.

UNCLASSIFIED

▲ **Ala., Mobile**—PARK IMPRVS.—City, City Hall, city park imprvs. $1,500,000.

▲ **Wash., Seattle**—TERMINAL, etc.—Port of Seattle, Bell St. Terminal, Zone 1, convert Ames terminal into modern ocean terminal, with 1 story, 500,000 sq. ft. salmon terminal, $10,000,000, CD 9/30/57; constr. third transit shed at East Waterway terminal, $850,000. G. T. Tredwell, ch. engr. CD 3/17/54.

COMPARE-

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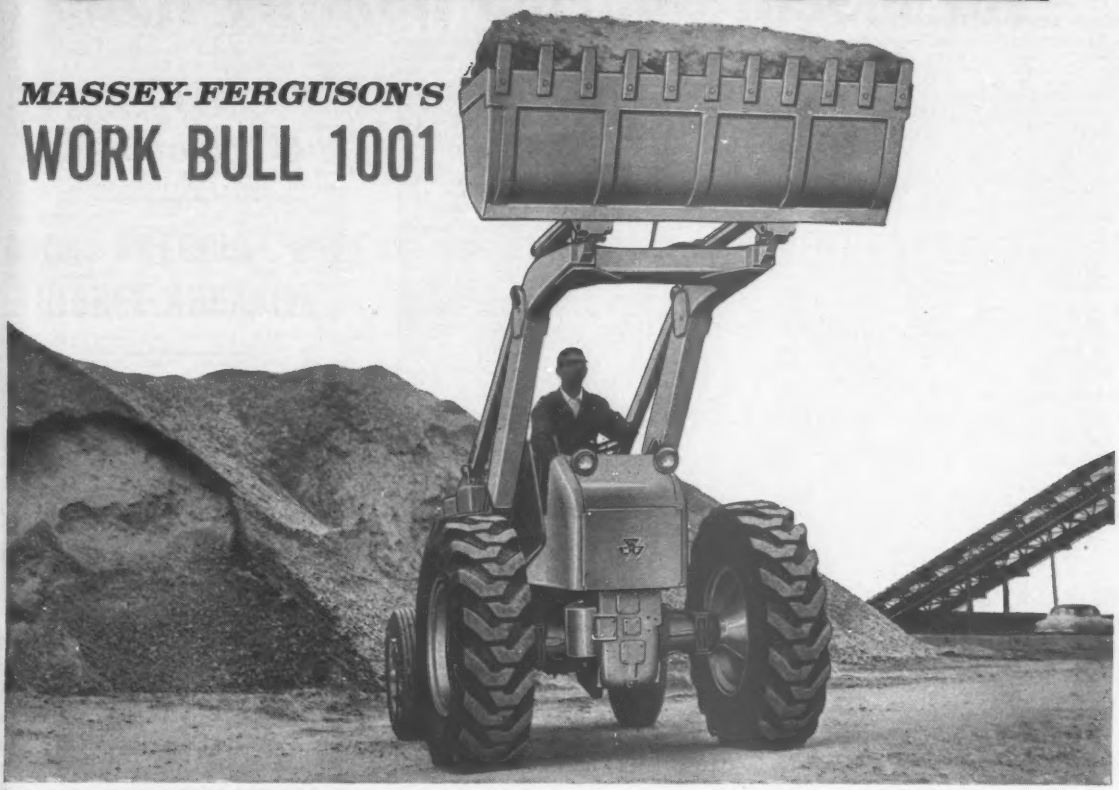

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STREET HIGHWAY LETTINGS

STREETS AND ROADS

August 24 Connecticut August 25 Massachusetts
August 28, September 11, 18 Vermont

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 8/11.

Mass.—Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., LB $1,324,846, est. $1,736,-148, hy. and bridge Interstate Rte. 95 1-95-1 (3) 2, Section 1, Attleboro; LB $2,243,414, est. $2,920,818, hy. and bridge, Interstate Rte. 95, 1-95-1 (5) 9, Section 2, Attleboro; LB $1,075,493, est. $1,461,-509, hy. and bridge Interstate Rte. 951, 95-1 (4), North Attleboro.

Mass.—White Oak Excavators, Inc., 61 East Main St., Plainville, Conn., LB $1,206,599, est. $1,457,991, hy. and bridge relocation Rte. 7, F-137 (5), Sheffield. CD 7/29.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 8/11.

Berke Moore Co., Inc., 8 Newbury St., Boston, Mass., LB $4,598,523, est. $4,988,332, hy. and bridge, Rte. 128, U272 (36), Lynnfield and Peabody. CD 7/29.

▲ **Construction Service Co., Inc.**, P.O. Box 311, Boundbrook, N. J., LB $1,994,908, Contr. 252, distr. water lines, Malden and Medford, MASSACHUSETTS. Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. Bids Aug. 11. CD 7/20.

BUILDINGS—LB & CA

▲ **Dimeo Constr. Co.**, 511 Westminster St., Providence, R. I., LB $1,609,500, HIGH SCHOOL, REHOBOTH, MASS. Rehoboth & Dighton Regional School Dist., Office Dighton High School, Rehoboth, Mass. Bids Aug. 11. CD 7/20.

▲ **Vara Constr., Inc.**, 718 Huntington Ave., Boston, Mass., LB $1,015,000, HOSPITAL, SALEM, MASS. North Shore Babies & Children's Hospital, Ropes House, 75 Dearborn St., Salem, Mass. Bids Aug. 11. CD 7/15.

K V Homes, Inc., Spring St., Windsor Lock, Conn., Owner Builds, $502,200, 36 HOUSES, "Fenwick Acres" Spring St., WINDSOR LOCKS, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

August 25 Maryland August 26, September 2 New Jersey

BUILDINGS—BA

▲ **N. Y., Little Valley**—COUNTY HOME, etc.—BA 9/2—Supervs. Cattaraugus Co., Court House, county home and infirmary, Machias. $1,000,000.

▲ **N. Y., Oceanside**—SCHOOLS—BA 9/11—Bd. Educ., Union Free School Dist. No. 11, Hempstead, Elementary School No. 4 addn., Oceanside Rd. and Land Pl.; Elementary School No. 8 addn., Fulton and Moore Aves.; Junior High School addn., Foxhurst Rd. and Castleton Court. Plans deposit $50 general, $25 trades. Andrew R. Fritz, 241 Sunrise Highway, Rockville Centre, archts. CD 3/13.

BUILDINGS—SLC

N. Y., Brooklyn—STUDENT RESIDENCE—Beth-El Hospital, Rockaway Parkway and Linden Blvd., Zone 12, soon lets contract student internes' residence. $500,-000. Plans deposit $50. Extended date. Jacob Sherman, 44 Court St., Zone 1, archt. CD 7/10.

HEAVY CONSTRUCTION—LB & CA

MARYLAND—State Rd. Comn., 300 W. Preston St., Baltimore, Zone 3. Bids opened 8/4,

Md.—Williams Constr. Co., Middle River, Md., LB $536,119, (8 bidders), grading, draining, surf. 2.6 mi. Pocomoke Thruway. S-117 and W0-306-1, Somerset and Worcester Counties;

Md.—T. B. Gatch & Sons, Inc., Belair Rd., Baltimore, Md., LB $102,630 (5 bidders), resurf. 3.98 mi. Md. 33 from Md. 451 toward Tilghman, T-163-4-220, Talbot Co.;

Md.—Bituminous Constr. Co., 3301 Ridgewood Ave., Baltimore 15, Md., LB $288,020, (6 bidders), b. conc. surf. 11.588 mi. Frederick Thruway. F-490-37-720, Frederick Co. CD 7/22.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

J. D. & C. M. Stuart, 3121 South St. N.W., Wash., D. C., CA $536,021, grading, drainage, surf. 2.46 mi. Rte. 97 Barthalow Rd. to Rte. 26, incl. box culverts, near Sykesville, CL-341-8-720, Carroll Co. Bids Feb. 3, awarded Aug. 6. CD 2/10, under LB.

BUILDINGS—LB & CA

K. Field Constr. Corp., 130 Cutter Mill Rd., Great Neck, N. Y., LB $924,000 (4 bidders), general contract addn. to and modernization of existing P.S. 19, South 3rd and Rodney Sts., BROOKLYN, N. Y. Bd. Educ. City of New York, Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Aug. 11. CD 7/6.

▲ **Fred & John F. Inganamort**, c/o Leonard G. Feinen, archt., 320 Lincoln Ave., Hasbrouck Heights, N. J., Own Forces, $26,000,000, 2,000 HOMES, Tiana Shores, HAMPTON BAYS, N. Y.

White Constr. Co., 95 Madison Ave., New York 16, N. Y., CA Est.$500,000, EXECUTIVE and ADMINISTRATIVE OFFICE, Saw Mill Rd., GREENBURGH, N. Y. Row, Peterson & Co., 104 S. Lexington Ave., New York 16, N. Y. Perkins & Will, 55 Church St., White Plains, N. Y., archts. Marvin H. Segner, 55 Church St., White Plains, N. Y., mechanical engr. Garfinkel & Marenberg, 100 W. 42nd St., New York 36, N. Y., structural engrs.

▲ **Colmar Constr. Co.**, 364 Gold St., Brooklyn 1, N. Y., LB $2,764,500 (19 bidders), general contract NURSES' RESIDENCE and TRAINING SCHOOL, Metropolitan Hospital, 1st Ave. and E. 97th St., Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Aug. 12. CD 7/20;
Abraham Newmeyer, 217-02 Jamaica Ave., Queens Village, N. Y., LB $489,700 (11 bidders), plumbing for Nurses' Residence and Training School, Metropolitan Hospital (New York, N. Y.).

F. B. Rich Co., 550 Summer St., Stamford, Conn., LB $559,329, 64 unit Arthur Albright Courts HOUSING addn. to Colin Kelly Heights Development, TONAWANDA, N. Y. City Housing Auth., Tonawanda, N. Y.

General State Auth., 18th and Herr Sts., Harrisburg, Pa., rejected bids Aug. 5, LIBRARY for Indiana State Teachers College, INDIANA, PA. Est. $520,000. Will re-advertise. CD 7/8.

▲ **Bogar Constr. Co.**, North Water St., Selinsgrove, Pa., LB $1,256,000 (7 bidders), general constr. HIGH SCHOOL, Smethport Area Jt. School Bd. (Proj. 850-644), SMETHPORT, PA. Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids Aug. 11. CD 7/16.

John Matricciani Co., Inc., 408 S. Caroline St., Baltimore, Md., LB $548,174, Contr. 2083-W, water main, Seven Locks Rd. to 5,800 ft. west of Falls Rd., Montgomery Co., HYATTSVILLE, MD. Washington Suburban Sanitary Comn., 4017 Hamilton St., Hyattsville, Md. Bids Aug. 10. CD 7/20.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 25 North Carolina, West Virginia

STREETS AND ROADS

August 25 North Carolina, West Virginia

Ky., Parish—BA 9/10—City, Municipal Bldg., water treatment plant, clear well structures, booster pumping stations, raising existing dam. $600,000. Plans deposit $80 refundable. Howard K. Bell, 553 S. Limestone St., Lexington, engr.

BUILDINGS—BA

▲† **Tenn., Clarksville**—"BIRD CAGE" FACILITY—BA 9/3—Atomic Energy Comn., Clarksville Naval Base, "Bird Cage" facility, incl. warehouse, admin. bldg., etc. for storing atomic weapons. $1,100,000. Bernard Johnson & Assoc., 4926 Travis St., Houston, Tex. archts.-engrs.

HEAVY CONSTRUCTION—LB & CA

NORTH CAROLINA—State Hy. Comn., Raleigh,

W. E. Graham & Sons, Box 268, Cleveland, N. C., CA $539,802, grading, CABC, BST 6.43 mi. NC 197 from point on US 19 and 23 approx. 5 mi. north of Weaverville, east across country or near existing roadway. Proj. 8.19045 S-46 (5), Buncombe Co. Bids July 28. CD 7/31, under LB.

Cone Bros. Co., Inc., P.O. Box 1259, Tampa, Fla., CA $569,564, runway extens., Tampa International Airport, TAMPA, FLA. Hillsborough Co. Aviation Auth., International Airport, Tampa, Fla. Awarded Aug. 3. CD 8/5, under LB.

LOUISIANA—State Hy. Dpt., Rm. 307, Hy. Office Bldg., Baton Rouge,

Coastal Contractors, Box 911, Baton Rouge, La., CA $522,536, wid'n., surf. existing concrete pavement 9.926 mi. Monroe-Archibald Hy., Rte. 15 SP 25-09-13 FAP No. F-164(6), Richland Parish. Bids June 17, awarded June 30. CD 6/24, under LB.

Mid-South Constructors, Box 4593, Baton Rouge, La., CA $752,800, Upper Bayou Anacoco Spillway and control structure, Vernon Parish, LOUISIANA. Louisiana Dpt. P. Wks., Baton Rouge, La. Bids Aug. 3. CD 8/10, under LB.

▲† **Brown & Root, Inc.**, 4100 Clinton Dr., Houston, Tex., CA $14,768,871, Old River Lock, Pointe Coupee Parish, CIVENG-16-047-59-200, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. Bids July 23. CD 7/29, under LB.

▲ **E. N. Murray**, Box 117, Buena Vista, Ga., LB $357,-820 (2 bidders), Proj. 1, water distr. sys., NATCHITOCHES, La. Mayor & City, City Hall, Natchitoches, La. Bids Aug. 3. CD 7/21;
Wilks, Dake & Steed, Tyler, Tex., LB $510,000 (3 bidders), Proj. 2, treatment plant (Natchitoches, La.);
Loftin & Woodward, Inc., 503 W. 1st St., Delhi, La., LB $448,200 (1 bidder), Proj. 3, clearing and grubbing, Sibley Lake (Natchitoches, La.).

BUILDINGS—LB & CA

▲† **Roscoe-Ajax Constr. Co., Inc.**, and **Roscoe Engineering Corp. & Assocs.**, 1107 19th St. N.W., Wash., D. C., LB $2,398,000 (12 bidders), COURT HOUSE and FEDERAL OFFICE BLDG., Proj. No. 46905, CHARLESTON, W. VA. General Services Admin., Regional Office Bldg., 7th and D Sts. S.W., Wash. 25, D. C. Bids Aug. 11. CD 8/6.

▲ **Southeastern Constr. Co.**, 1121 Quarrier St., Charleston, W. Va., CA $1,404,000, Charleston General HOSPITAL addn., CHARLESTON, W. VA. Bd. Trustees, Charleston General Hospital, Charleston, W. Va. Bids July 22. CD 7/28, under LB.

Cloister Homes, 114 N. Greene St., Greensboro, N. C., Day Labor, $575,000, 77 RESIDENCES, Rochester Heights, subdivision, RALEIGH, N. C.

▲ **E. A. Scott & Sons**, P.O. Box 946, Americus, Ga., LB $1,011,595, 110-unit HOUSING projects, GA-183-1 and GA-183-2, WINDER, GA. Winder Housing Auth., Winder, Ga. Bids Aug. 6.

▲† **Allen M. Campbell, Co., Inc.**, 3212 Chandler Hy., Tyler, Tex., LB $1,076,000, (23 bidders), U. S. POST OFFICE and COURT HOUSE, OCALA, FLA. General Services Admin., 50 7th St. N. E., Atlanta, Ga. Kemp, Bunch & Jackson, 33 S. Hogan, Jacksonville, Fla., archts. Bids Aug. 12. CD 7/8.

Pittman Constr. Co., Box 8116, New Orleans, La., CA $561,000, Aurora ELEMENTARY SCHOOL, Cut-Off Rd., Algiers, NEW ORLEANS, LA. Orleans Parish School Bd., 703 Carondelet St., New Orleans, La. Bids July 14. CD 7/23, under LB.

Leo C. Miller Co., E. Bloom, Louisville, Ky., CA $592,-293, T. C. Cherry and 11th St. ELEMENTARY SCHOOLS addn., alterations, and alterations only to Bowling Green HIGH SCHOOL, BOWLING GREEN, KY. Bd. Educ., 1101 College St., Bowling Green, Ky. Bids Apr. 22, awarded June 24. CD 5/20, under LB.

▲ **Orlin Edwards**, Fairwood Lane, Chattanooga, Tenn., CA Est. $2,000,000, 14 acre SHOPPING CENTER, Hy. 58, CHATTANOOGA, TENN. Lake Hills Shopping Center., Inc., Hamilton National Bank Bldg., Chattanooga, Tenn. Bebb & Olson, Gatlinburg, Tenn., archts.

Sorrell Bros., Sparta, Tenn., CA $621,000, ADMINISTRATION BLDG. for Tennessee Polytechnic Institue, COOKEVILLE, TENN. State Purch. Comn., Nashville, Tenn. CD 7/17, under LB.

A. B. Newton & Co., P. O. Box 131, Vidalia, Ga., CA $597,743, 60 unit HOUSING, Proj. Tenn. 40-1 and 40-2, LEXINGTON, TENN. Lexington Housing Auth., Lexington, Tenn. Bids July 21. CD 7/31, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 1 Ohio

STREETS AND ROADS

September 1 Ohio September 2 Michigan

HEAVY CONSTRUCTION—LB & CA

Sheaf Constr. Co., 1758 Cleveland St., Columbus, O. LB $206,107, est. $195,567, water plant at Lake Burr Oak to handle water for 3-county pipe line, Athens Co., Burr Oak, OHIO. Dpt. P. Wks., State Depts. Bldg., Columbus;
Gene Fitch, Hebron, O., LB $529,347, est. $601,153, water pipe line from Lake Burr to serve various Ohio towns, Athens, Hocking and Perry Counties (Ohio).

▲ **OHIO**—State Hy. Dpt. Columbus, Zone 15, Bids opened 8/4,

O.—W. L. Harper Co., Inc., 2910 E. Highland Ave., Cincinnati, O., LB $926,999, est. $952,600 (6 bidders), Type T-71 2.532 mi. SR 128 (6.06-8.51) S-US-763(2), City of Hamilton Proj. 393, Butler Co.;

O.—A. J. Baltes, Inc., 11 Olive St., Norwalk, O. LB $974,458, est. $977,600 (8 bidders), Type T-71, 2.466 mi. SR 57-(16.42) (18.50) U-602 (16), City of Elyria, Proj. 395, Lorain Co. CD 7/16.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Chatham Paving Co., 8452 S. State St., Chicago, Ill. CA $1,295,883, paving Northwest Expressway 0.42 mi. Diversey Parkway to Sacramento in Chicago, Cook Co. Bids July 24, awarded Aug. 7. CD 7/28.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Keeley Bros. Constr. Co., 4211 State St., East St. Louis, Ill., CA $2,137,481, 2 grade separation structures, East St. Louis Expressway FAI-70, St. Clair Co. Bids July 24. CD 7/28.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Sangamo Constr. Co., 700 N. MacArthur St., Springfield, Ill., CA $530,578, resurf. US 67 near White Hall, Greene Co. CD 6/10, under LB.

▲ **Dpt. Purchases**, City Hall, Chicago 2, Ill., rejected bids May 5, pumps at Southwest Pumping Plant, CHICAGO, ILL. LB Est. $3,000,000. CD 5/22, under LB.

▲ **Santucci Constr. Co.**, 5025 Church St., Skokie, Ill., CA $3,977,500, Columbus Ave. water tunnel, CHICAGO, ILL. Dpt. Purchase, City Hall, Chicago 2, Ill. Bids June 26, awarded Aug. 11. CD 7/1, under LB.

Indiana Gunite & Constr. Co., Inc., and **E. L. Culver**, 226 N. Alabama St., Indianapolis, Ind., CA $697,-243. Div. A, rehab. trunk sewers, incl. Dick Brewery, Payson, Cedar, Broadway, Whipple Creek, Jefferson and South Side, repair and reline brick, rock sewers,

(Continued on page 106)

"WE DRILL UP TO 3,000 feet with each Timken® carbide insert bit"

Site: Oregon's Hills Creek Dam

ROCK: BRECCIA TUFF, HIGHLY ABRASIVE

Special report from Green Construction Co. and Tecon Corp.

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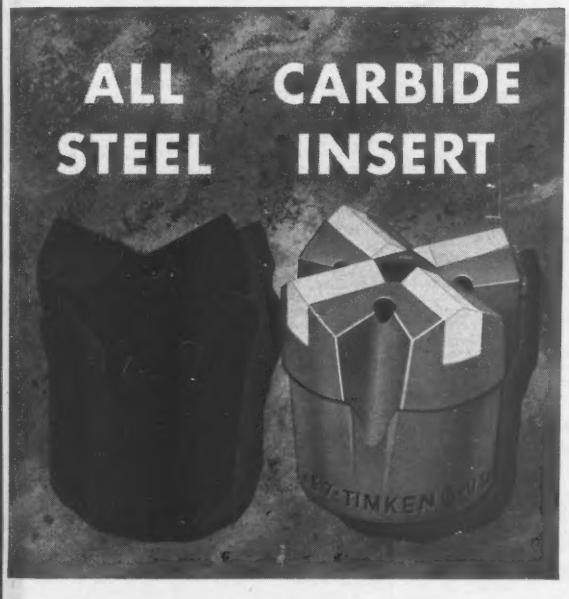

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TIMKEN® REMOVABLE ROCK BITS

(Continued from page 104)

QUINCY, ILL. City, City Hall, Quincy, Ill. Bids July 13. (Correction—contractor). CD 8/7, under CA.

† **Paul Hardeman, Inc.**, 10579 Dale Ave., Stanton, Calif., CA $924,874, missile facilities addn., Chanute Field, RANTOUL, ILL. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids July 30. Awarded Aug. 11. CD 8/5, under LB.

BUILDINGS—LB & CA

▲ **Wean Engineering Co.**, 347 N. Park Ave., Warren, O. CA, STEEL PLANT addn., 565 ft. line to produce zinc coated steel sheets, MIDDLETOWN, O. Armco Steel Corp., 1939 Armco Ave., Middletown, O. CD 3/17/55.

▲ **Trans-American Constr. Co.**, 5252 Sheridan Rd., Chicago, Ill., Owner Builds, $1,000,000, MOTEL, Indianapolis Blvd., HAMMOND, IND. Awarded July 1.

F. A. Wilhelm Constr. Co., Inc., 3914 Prospect St., Indianapolis, Ind., CA $500,000, Est over PLASTER MFG. PLANT, SHOALS, IND. National Gypsum Co., 325 Delaware Ave., Buffalo, N. Y. Bids July 27. CD 7/20.

Roberts, Lang & Gray, 5138 Madison St., Chicago, Ill., CA $800,000, FACTORY, 4303 Crawford Ave., CHICAGO, ILL. Universal Battery Co., 3410 LaSalle St., Chicago, Ill. Bids June 10. CD 5/12, under LB.

▲ **Bank Building & Equipment of America**, 1130 Hampton St., St. Louis, Mo., CA $1,000,000, brick, glass and marble BANK alterations, CHICAGO, ILL. Bell Savings & Loan Assn., 79 W. Monroe St., Chicago, Ill. Bids Aug. 1. W. C. McCormick, 1130 Hampton St., St. Louis, Mo., archt. CD 1/14.

▲ **Blaw-Knox Co.**, 1204 Blaw Knox Bldg., Pittsburgh 22, Pa., CA, SULFAMIC ACID PLANT, JOLIET, ILL. Olin Mathieson Chemical Corp., 460 Park Ave., New York, N. Y. CD 2/14/58.

Hansen & Werhane, 3104 Skokie Valley Rd., Highland Park, Ill., LB $508,821, Joseph Sears ELEMENTARY SCHOOL, KENILWORTH, ILL. Bd. Educ. Dist. 38, 542 Abbottsford St., Kenilworth, Ill. Bids July 10. CD 4/9.

Hart & Reilly, 428 S. 21st St., Mattoon, Ill., CA $502,700, general contract GRADE and JUNIOR HIGH SCHOOL bldg., gymnasium, and remodeling, high school, VILLA GROVE, ILL. Bd. Educ., Villa Grove, Ill. CD 4/13.

Rekstad Builders, 1040 Ogden Rd., Downers Grove, Ill., CA $644,500, JUNIOR HIGH SCHOOL and GYMNASIUM, WHEATON, ILL. School Dist. 36, 504 Naperville Rd., Wheaton, Ill. Awarded Aug. 1. CD 7/23, under LB.

Kraemer Bros., Inc., Plain, Wis., LB $536,000, general contract HIGH SCHOOL, COBB, WIS. Bd. Educ., Cobb, Wis. Bids July 30. CD 6/30.

Keller Constr. Co., P.O. Box 333, Winona, Minn., CA $584,000, general contract, COURTHOUSE, MENOMONIE, WIS. Dunn Co., Menomonie, Wis. Bids July 29. (Correction—contractor). CD 8/10, under CA.

Meyer Corp., Hy. 41, Neenah, Wis., CA Est. $500,000, 1 story, 120 x 400 ft., concrete, concrete block, glass and aluminum steel FOUNDRY, NEENAH, WIS. Neenah Foundry, Neenah, Wis. Wisconsin Bridge & Iron Co., 5023 N. 35 St., Milwaukee, Wis., engr.

▲ **Van Deilen Homes**, 1735 Sylvania Ave., Toledo, O., Owner Builds, $15,000,000, 600 HOMES, Green Hills, Sterns Rd., Douglas and Secor Rds., Bedford Twp., TEMPERANCE, MICH.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

August 24 Iowa — August 26 Arkansas — August 28 Oklahoma

STREETS AND ROADS

August 24 Iowa — August 26 Arkansas — August 28 Minnesota, Oklahoma

▲ **Tex., Corpus Christi**—BA 8/31—Nueces County Navigation Dist., Gugenheim-Cohn Bldg., 2.8 mi. ship channel exten., Turning Basin; tanker and barge dock, Viola, near here. $1,700,000. CD 10/1/56.

† **South Dakota**—BA On Or About 9/9—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., furnishing power structures intake bulkhead frames and dogging devices, near Pierre, Oahe Reservoir Proj. ENG-25-066-60-9. $400,000-$700,000. CD 9/23.

▲† **Minnesota**—BA 9/22—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, Zone 1, Upper Lock, St. Anthony Falls, Mississippi River, Minneapolis, Inv. No. CIVENG-21-018-60-1. Plans deposit $100. CD 8/4.

BUILDINGS—BA

▲† **Tex., Houston**—COURTHOUSE AND FEDERAL OFFICE—BA 9/8—General Services Admin., 1114 Commerce St., Dallas, U. S. Court House and Federal Office Bldg. $12,000,000. Extended date. Staub, Rather & Howze, 2814 Virgina St., Jno. F. Staub, 2814 Virginia St., Harvin C. Moore, 2006 W. Alabama St., Rustay & Martin, 1811 Crawford St., archts. H. E. Bovay, Jr., 5009 Caroline St., Walter P. Moore, 2 Pinedale St., engrs. CD 7/21.

HEAVY CONSTRUCTION—LB & CA

▲† **La Crosse Dredging Corp.**, 140 S. Dearborn St., Chicago 3, Ill., CA $1,357,669, flood protection levee proj., incl. 1.75 mi. earth fill, Alternate II, hydraulic fill, Item L-2-A, Humboldt St. to Maline Creek, St. Louis, CIVENG-23-065-59-60, MISSOURI. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids June 24. CD 6/29, under LB.

▲† **J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan., CA $2,149,380, Sherman Dam, Missouri River Basin Proj., Loup City, Sherman Co., Spec. DC 5214, NEBRASKA. Bureau Reclamation, Dpt. Interior, St. Paul, Neb. Bids July 30. CD 8/3, under LB.

† **Wm. E. Goetz & Sons**, Box 6448, San Antonio, Tex., CA $699,576, airmen's dormitory imprvs., remodeling, LACKLAND AIR FORCE BASE, TEX. Base Procurement Office, Bldg. 5211, Lackland Air Force Base, San Antonio, Tex. Bids June 19. CD 7/6, under LB.

BUILDINGS—LB & CA

W. A. Klinger, Inc., 2015 7 St., Sioux City, Iowa, CA $794,887, Mary Greeley Memorial HOSPITAL addn., AMES, IOWA. City, City Hall, Ames, Iowa. Bids July 14. CD 6/23.

▲ **Edwin G. Asche**, 4623 Chippewa St., St. Louis 16, Mo., Separate Contracts, $1,000,000, Progress Plaza SHOPPING CENTER, incl. 250 car parking, Chippewa St. at Ridgewood Ave. to Beck Ave., ST. LOUIS, MO. Erwin Carl Schmidt, 9430 Manchester Rd., Brentwood 19, Mo., archts.

Bush Constr. Co., Hot Springs, Ark., CA Est. $500,000, 53 unit MOTEL, Central Ave. opposite Oaklawn Race Track, HOT SPRINGS, ARK. Stagecoach Motels, Inc., c/o Stowers & Boyce, archts., 1001 W. 2 St., Little Rock, Ark. CD 4/23.

Riley Black Co., 925 NW 23rd St., Oklahoma City, Okla. CA Est. over $500,000, 50 unit APARTMENT, NW 23rd and Meridan, OKLAHOMA CITY, OKLA. Meridian Terrace Apartments Corp., 300, Cameron Bldg., Oklahoma City, Okla. Graves & Assocs., Cameron Bldg., Oklahoma City, Okla. archts. Awarded Aug. 4.

▲ **Rob. H. Smith & Co.**, 1915 Kolfahl St., Dallas, Tex., LB $794,900 (3 bidders), combined bid, 1st phase NUCLEAR SCIENCE CENTER FACILITY, COLLEGE STATION, TEX. A&M College of Texas, College Station, Tex. Bids Aug. 7. CD 6/9;

Temple Assocs., Diboll, Tex., LB $555,800 (2 bidders), bldg. only (College Station, Tex.);

General Electric, Atomic Power Div., 1801 N. Lamar St., Dallas, Tex., LB $242,027 (2 bidders), nuclear only, (College Station, Tex.).

J. P. Boone, Builder-Developer, 4320 Alief Rd., Houston, Tex., Owner Builds, $550,000, 88 APARTMENT UNITS named "Royal Windsor Apartments"; $450,000, 78 APARTMENT UNITS, HOUSTON, TEX. Lucian T. Hood, 2317 Bissonnet St., Houston, Tex. archt. CD 11/10.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Sacramento**—BA 9/8—Sacramento Municipal Utility Dist., Engineering Dpt., 1708 59th St., Camino Tunnel, appurtenant works and access roads, Upper American River Project, El Dorado Co., Inv. No. 2212. Plans deposit $5. CD 1/8/58.

BUILDINGS—BA

Calif., Los Angeles—SCHOOL—BA 9/2—Bd. Educ., 1425 S. San Pedro St., Carver Junior High School. $932,000. Paul R. Williams, 3757 Wilshire Blvd., archt. CD 6/9/58.

BUILDINGS—SLC

Que., Montreal—COLLEGE—Rev. Freres, Maristes, St. Vincent de Paul, soon lets contract, 4 story College Laval extens. $750,000. Crevier, Lemieux & Mercier, 1065 Pratt Ave., Outremont, archts. Pelletier & Forest, 506 St. Catherine St. E., engrs.

HEAVY CONSTRUCTION—LB & CA

† **R. & P. Contractors, Inc.**, Rte. 2, P. O. Box 438, Shelton, Wash., LB $519,900, est. $745,390, (5 bidders), clearing Howard A. Hanson reservoir area on Green River, Kanasket, Inv. 59-43, WASHINGTON. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Aug. 4. CD 7/20.

▲ **Lee Hoffman**, 415 NW Cedar, Beaverton, Ore., CA $2,122,881, approx. 50 mi. 6-to-27-in. sanitary sewer lines OAK GROVE, ORE. Oak Lodge Sanitary Dist. No. 1, Box 522, Oak Grove, Ore. Awarded Aug. 7. CD 7/29.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 8/12,

Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif., LB $2,240,793, (14 bidders), grading, paving to constr. 4.4 mi. 4-lane freeway U. S. 101 between 0.6 mi. south of Guenevile Rd. and Lytton, north of Healdsburg incl. interchange facilities, 5 bridges and frontage road, IV-Son-1-B. HIBG. A, Sonoma Co. CD 7/15.

† **Bureau Reclamation, Dpt. Interior**, Lewiston, Calif., rejected bids July 7, clearing 5,595 acres, Trinity Reservoir site, Trinity Center, East Fork and Trinity River areas, Central Valley Proj. Trinity Co., Spec. 200C-419. CALIFORNIA. LB $522,995. CD 7/13, under LB.

BUILDINGS—LB & CA

▲ **Sand Lake Constr. Co.**, 528 C St., Anchorage, Alaska, CA $1,000,000, 50 HOUSES, ANCHORAGE, ALASKA. Crestview Village Homes, c/o contractor.

C. Lagerquist, 2821 E. 55 St., Seattle 5, Wash., CA Est. $675,000, 7 story, rein.-con. APARTMENT, SEATTLE, WASH. 919 2 Ave. W., Inc., c/o contractor. G. Bolotin & Assocs., 915 E. Pine St., Seattle, Wash., archts.

Frederick J. Chapek Co., 2917 T St., Sacramento, Calif. CA $599,500, Davis HIGH SCHOOL, DAVIS, CALIF. Davis Jt. Union High School Dist., 2[illegible] Russell Blvd., Davis, Calif. Bids July 16. CD 7/23, under LB.

R. G. Watt Constr. Co., 7862 S. Western Ave., Los Angeles, Calif., CA $576,800, 52 DWELLINGS, Glenhope Dr., Ranlett Ave., Frandale Ave., LA PUENTE, CALIF. Southward Bldg. Corp., 7862 S. Western Ave., Los Angeles, Calif.

Aldgate Land Co., 7862 S. Western Ave., Los Angeles, Calif., CA $626,200, 52 DWELLINGS, 213 St. and Normandie Ave., Tract 24895, LOMITA, CALIF. Baygrove Land Co., 7862 S. Western Ave., Los Angeles, Calif.

Williamson Bros., 11003 San Fernando Rd., Pacoima, Calif., LB $531,500, est $425,000, (11 bidders), Balboa Blvd. SCHOOL, Granada Hills, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids July 31. CD 7/23.

Pickering Constr. Co., 11518 Lambert Ave., El Monte, Calif., Owner Builds, $576,270, 38 DWELLINGS, Genoa St., Venice Ave., Naples Ave., Tract. 24642, MONROVIA, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 9 Ontario

STREETS AND ROADS

August 26, September 9 Ontario

September 3 Prince Edward Island

BUILDINGS—BA

▲ **Man., Winnipeg**—PAPER MILL PLANT—BA 8/25—Building Products Ltd., Point Douglas, paper mill plant, building products plant expansion. $1,000,000. Green, Blankstein, Russell & Assocs., 222 Osborne St., archts. CD 7/14.

HEAVY CONSTRUCTION—LB & CA

BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria, Bids opened 8/6,

Peter Kiewit Sons Co. Ltd., 1587 W. 8th St., Vancouver, B. C., LB $583,795, total est. $3,000,000, first contract, piers and abutments, main ch. span on rein.-con. piers, steel pipe pile, steel H piles driven to rock on south, timber piles on north, Kamloops Bridge over Fraser River. CD 7/10.

BUILDINGS—LB & CA

▲ **Peter Leitch Constr. Ltd.**, 170 Scott St., Winnipeg, Man., CA $1,350,000 (11 bidders), 1 story HEADQUARTERS, OFFICE and WAREHOUSE, Notre Dame Ave., WINNIPEG, MAN. Federated Co-operative Ltd., 211 Ave. D N., Saskatoon, Sask. Bids July 23, awarded Aug. 6. CD 7/15.

▲ **Andeen Constr. Ltd.**, 269 Queen St. E., Brampton, Ont., LB $1,188,986 (10 bidders), COMPOSITE HIGH SCHOOL, BRAMPTON, ONT. The Central Peel Dist. High School Bd., Brampton, Ont. Bids July 28. CD 7/13.

▲ **Carl E. Miller Constr. Ltd.**, 779 Little Simcoe St., London, Ont., Owner Builds, $1,600,000, 9 story, structural steel frame, brick APARTMENT, Carfrae Crescent, LONDON, ONT. CD 2/17.

John Gaffney Constr. Co., 29 Downie St., Stratford, Ont. CA Est. $500,000, 1 story, 52,000 sq. ft. steel, block PLANT addn., 2 story OFFICE section, STRATFORD, ONT. Fischer Bearing Mfg. Co., Ontario St., Stratford, Ont. Gordon M. Ritchie, Ontario St., Stratford, Ont., archt. Awarded Aug. 4.

Russell Constr. Ltd., 504 Harbor Commission Bldg., Toronto, Ont., CA Est. $950,000, 1 and 2 story, T-shaped, 160x400 ft. CUMMER AVE. JUNIOR HIGH SCHOOL, TORONTO, ONT. North York Bd. Educ., 15 Oakburn Crescent, Toronto, Ont. Bids July 31, awarded Aug. 7. CD 7/13.

Rene LaFleur Ltee, 3600 Barclay Ave., Montreal, Que., Owner Builds, $700,000, 6 story, bsmnt., 80x160 ft., brick, rein.-con. frame COMMERCIAL BLDG., Cavendish Blvd., MONTREAL, QUE. Charles Grenier, 3600 Barclay Ave., Montreal, Que., archts. Eskenazi, Leobenberg, Slone & Berstein, 6819 Decarie Blvd., Montreal, Que., engrs. CD 8/19.

▲ **Adelard Jacques Ltee**, 526 Gait St. W., Sherbrooke, Que., CA Est. $1,000,000, 7 story St. Vincent de Paul HOSPITAL WING ADDN., SHERBROOKE, QUE. Bids July 28, awarded Aug. 6. CD 7/17.

Smith Brothers & Wilson, Ltd., 2135 6th Ave., Regina, Sask., CA $655,000, 5 story, 50x90 ft. prestressed concrete frame, brick MEDICAL-DENTAL BLDG., REGINA, SASK. Professional Properties, Ltd., 11th Ave. and Rose St., Regina, Sask. Black, Larson, McMillan & Assocs., c/o Black Block, Regina, Sask., archts. Awarded Aug. 4.

J. G. Fitzpatrick Ltd., 5151 Western Ave., Montreal, Que., CA Est. $500,000, 2 story, T-shaped 170x180 ft. steel, rein.-con. REFINERY LABORATORY, 37x180 ft. and 37x130 ft. wings, Ville d'Anjou, MONTREAL, QUE. B. P. Canada Ltd., 550 Sherbrooke St. W., Montreal, Que. Bids Aug. 5. CD 7/31.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Birdsboro Steel Foundry & Machine Co.**, 1941 Furnace St., Birdsboro, Pa., U.S.A., CA, STEEL ROLLING MILL, MONCLOVA, MEXICO. Altos Hornos de Mexico, S.A., Monclova, Mexico. CD 1/27/56.

(Proposal Advertisements see p. 120 to 122)

ATLAS

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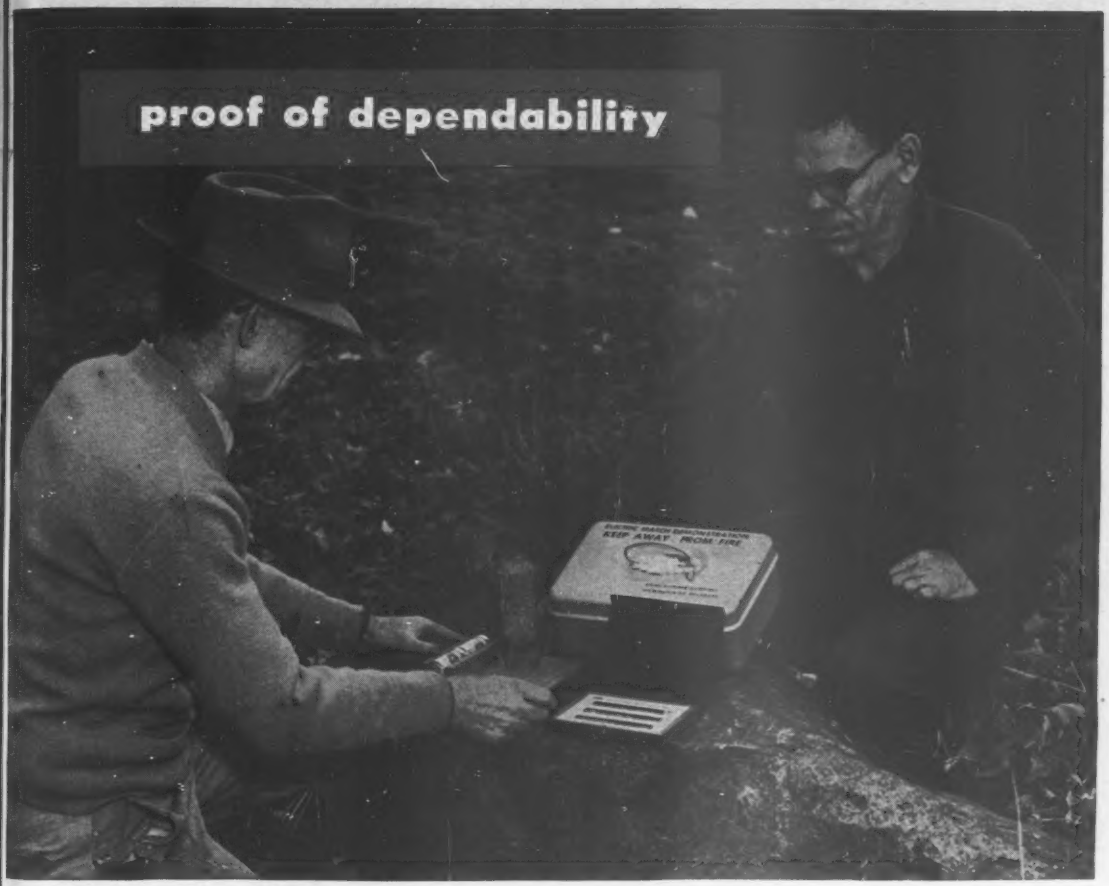

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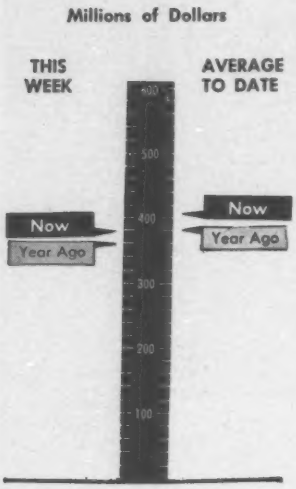
CONTRACTS ...



AMOUNT OF CONTRACTS LET

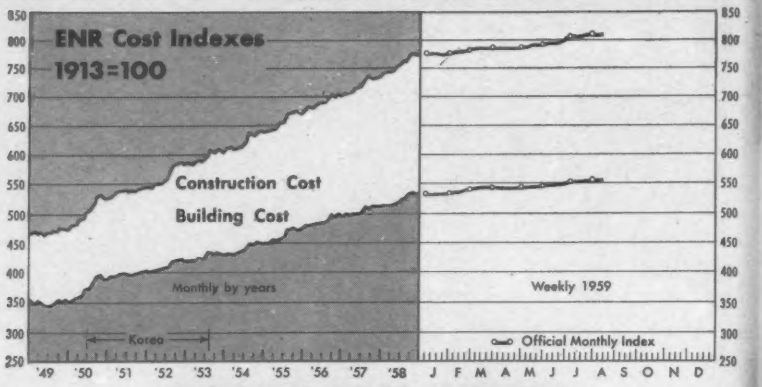
	This Week millions	Cum. 34 wks 1959	Chge '58-'59 %
All Heavy Constr.	$377.9	$14,032.1	+ 5
By Ownership			
PRIVATE	210.3	6,833.2	+24
PUBLIC	167.6	7,198.9	− 8
State & Municipal	83.3	5,142.2	− 8
Federal	84.3	2,056.7	− 8
By Type of Work			
PUBLIC			
Waterworks	13.5	290.7	+33
Sewerage	15.1	443.1	+ 9
Bridges*	10.0	542.2	+16
Highways	22.4	2,075.2	− 6
Earthwork, Dams & Waterways	40.9	638.1	−17
Buildings:			
Excl. Housing	40.9	1,793.6	0
Housing	1.5	465.6	−48
Unclassified	23.3	957.9	− 9
PRIVATE			
Buildings:			
Mass Housing	83.7	3,103.7	+18
Commercial	18.3	1,533.7	+19
Industrial	104.1	1,864.0	+46
Unclassified	4.2	324.3	+ 3

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

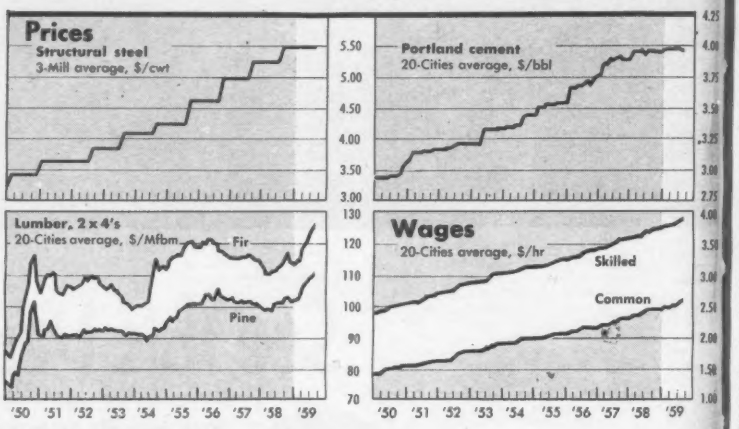
New Capital For Construction	Week of Aug. 13 millions	Cum. 33 wks 1959	Chge '58-'59 %
Corporate Securities	$ 7.4	$2,449.1	−31
State and Municipal:			
All Except Housing	91.8	4,063.2	− 4
Housing	.....	75.2	+122
Federal Loans	.....	92.0	−33
Federal Aid	2,840.0	2,858.0	....
Total Nonfederal	$2,939.2	$9,537.5	+20
Federal Appropriations:			
Projects in U. S.	$ 35.7	345.5	−59
Outside U. S.	2.9	4.4	−30
Total New Capital	$2,977.8	$9,887.4	+12



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Aug 13 1959	% Change from July 9 1959	% Change from Aug 14 1958
Construction Cost	811.90	+0.5	+5.2
Building Cost	555.40	+0.5	+4.0

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Aug 13 1959	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Aug 13 1959	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	624	0	+8.7	497	+1.0	+5.3
Baltimore	745	+0.5	+5.4	553	+0.7	+3.9
Birmingham	632	0	+5.5	508	+0.6	+4.5
Boston	835	+0.5	+3.2	565	+1.1	+3.3
Chicago	928	+0.5	+8.5	590	+0.7	+6.1
Cincinnati	818	0	+5.3	539	+0.6	+4.7
Cleveland	925	+1.1	+5.8	558	+1.8	+5.9
Dallas	604	+3.4	+5.4	490	+1.0	+4.5
Denver	742	0	+1.5	540	+0.6	+1.9
Detroit	962	0	+8.2	599	0	+4.5
Kansas City	803	−0.1	+4.6	558	−0.2	+4.7
Los Angeles	879	0	+6.9	557	0	+5.7
Minneapolis	860	0	+4.4	569	0	+2.9
New Orleans	635	0	+6.4	508	+0.6	+5.2
New York	1016	0	+7.6	647	−0.2	+5.5
Philadelphia	795	0	−1.0	582	0	+0.2
Pittsburgh	852	0	+3.0	601	0	+1.7
St. Louis	885	0	+4.2	584	0	+3.0
San Francisco	860	+4.4	+5.1	554	+0.7	+4.5
Seattle	839	+0.4	+5.0	508	+0.6	+4.9
U. S.—20 Cities' average	812	+0.5	+5.2	555	+0.4	+3.9
Montreal	620	0	+2.8	457	0	+1.8
Toronto	678	+2.2	+10.1	509	+3.0	+8.5

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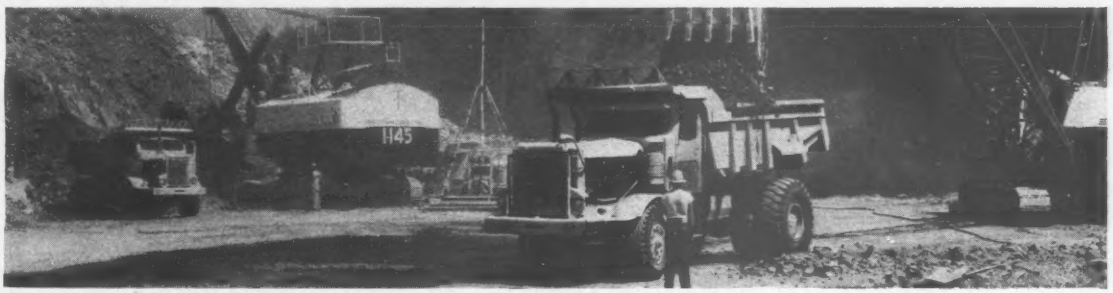

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GM DIESEL

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Equipment Firms Boost Sales

- **First-half reports show 15 of 21 manufacturers lifted volume, 16 boosted net income.**
- **Further increases forecast for new orders point to a record year.**

The sharp recovery this year in heavy construction volume reflects favorably in the first-half sales and earnings reports of many construction equipment manufacturers.

ENR's compilation of reports from 21 manufacturers shows that 15 companies boosted their first-half sales above those recorded in the comparable period of last year (see table). Only six companies report a decline in sales.

Net earnings and profit margins make even better reading. Sixteen companies registered a gain in net income, and 17 companies raised their margin of profit to sales. Three of these came out of 1958 first-half red ink into the black during this year's comparable period.

Biggest sales increases were scored by Clark Equipment, 59.7%; Koehring, 37.9%; and Caterpillar Tractor, 36%.

Largest increases in net were registered by Koehring, 295.2%; Oliver, 279%; and Clark Equipment, 153.6%.

Smallest sales increase and smallest increase in net income are reported by Universal Marion. However, of the firms surveyed, Universal-Marion shows the largest profit margin—10.24%.

Only one company among the 21 shows a deficit. That one is R. G. LeTourneau, Inc., whose 1959 first-half deficit was larger than in the same period last year—$1.5 million compared to $695,000.

Companies that went from a deficit in 1958 to a profit this year are Bucyrus-Erie, J. I. Case and Thew Shovel.

Of the six companies showing a decline in sales volume, only four also report a decline in net earnings. They are Allis-Chalmers, Harnischfeger, Westinghouse Air Brake and Worthington. One company—Baldwin-Lima-Hamilton—showed a decline in sales, but it increased its net earnings.

Despite the general improvement, however, few of the companies succeeded in equaling or surpassing the profit margins recorded in the first-half periods of 1956 and 1957 (ENR Aug. 15, 1957, p. 171). Of the 14 companies surveyed then by ENR, only four in this year's roundup surpassed the profit margins of the earlier years. They are Baldwin-Lima-Hamilton, Blaw Knox, Clark Equipment and International Harvester.

This year's profit margins, however, are generally above those of last year. Improved profit margins in the first half are reported by 17 of the 21 companies checked.

All these reports provide a solid foundation for the remainder of this year and the first half of next year.

Construction and mining equipment manufacturers now have a record first-half volume of new orders on their books. The producers expect that total 1959 orders will top last year by 27%. This is indicated by forecasts for each of the next four quarters by a sample of manufacturers who cooperate in the survey with the McGraw-Hill Economics Department.

On the basis of these reports, the

How Equipment Makers Are Doing in '59 (add 000)

Company	Six Months Ending	Sales 1959	Sales 1958	% Change from '58	Net Earnings 1959	Net Earnings 1958	% Change from '58	Profit Margin (%) 1959	Profit Margin (%) 1958
Allis-Chalmers	June 30	$221,226	$269,506	−17.9	$5,314	$8,611	− 38.3	2.40	3.20
Baldwin-Lima-Hamilton	June 30	71,313	71,438	− 0.2	2,674	1,878	+ 42.4	3.75	2.63
Blaw-Knox	June 30	93,000	89,075	+ 4.4	4,506	3,334	+ 35.2	4.85	3.74
Bucyrus-Erie	June 30	36,728	29,074	+26.3	1,368	618(d)	.....	3.72	....
J. I. Case	Apr. 30	93,772	75,474	+24.2	2,939	291(d)	.....	3.13	....
Caterpillar Tractor	June 30	404,481	297,433	+36.0	28,863	14,732	+ 95.9	7.14	4.95
Chain Belt	Apr. 30	31,937	27,268	+17.1	2,200	1,640	+ 34.1	6.89	6.01
Clark Equipment	June 30	103,158	64,602	+59.7	6,732	2,655	+153.6	6.53	4.11
Deere & Co.	Apr. 30	277,837	212,513	+30.7	25,144	16,124	+ 55.9	9.05	7.59
Gardner-Denver	June 30	35,304	27,826	+26.9	3,522	2,211	+ 59.3	9.98	7.95
Harnischfeger	Apr. 30	38,302	39,605	− 3.3	815	850	− 4.1	2.13	2.15
International Harvester	Apr. 30	598,543	509,737	+17.4	31,383	19,245	+ 63.1	5.24	3.78
Joy Manufacturing	June 30*	70,213	66,676	+ 5.3	3,682	2,634	+ 39.8	5.24	3.95
Koehring	May 31	30,155	21,863	+37.9	1,316	333	+295.2	4.36	1.52
Link Belt	June 30	78,005	72,093	+ 8.2	3,379	2,728	+ 23.9	4.33	3.78
Le Tourneau (R.G.) Inc.	June 30	3,262	4,039	−19.2	1,529(d)	695(d)	.....	....	....
Oliver	Apr. 30	54,310	51,765	+ 4.9	1,444	381	+279.0	2.66	0.74
Thew Shovel	June 30	14,013	10,633	+31.8	215	293(d)	.....	1.53	....
Universal Marion	June 30	22,307	22,242	+ 0.3	2,285	1,926	+ 18.6	10.24	8.66
Westinghouse Air Brake	June 30	94,241	113,282	−16.8	4,683	4,912	− 4.7	4.97	4.34
Worthington Corp	June 30	89,091	91,424	− 2.6	3,674	4,163	− 11.7	4.12	4.55

(d) deficit **9 months*

Booms reach skyward as five of Leake & Nelson's Moto-Cranes keep construction on schedule. A sixth Lorain, a crawler hoe (in left background), works on the foundation drainage system. Leake & Nelson Co., Inc. has purchased 17 Lorains.

FIVE LORAIN MOTO-CRANES ERECT NATION'S LONGEST PRECAST CONCRETE ARCHES

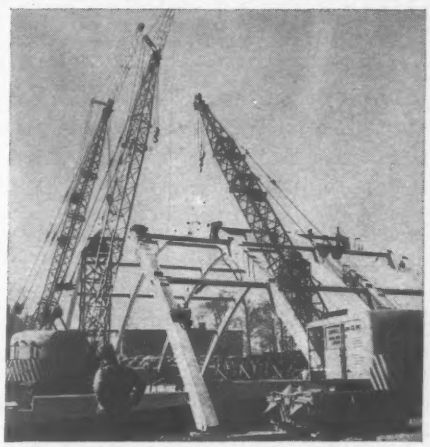
At Fairfield University in Connecticut, five husky Lorain Moto-Cranes owned by Leake & Nelson Co., Inc. of Bridgeport, Conn., help build a unique new gymnasium. Supports for the structure consist of eleven, three-hinged, parabolic, reinforced concrete arches that measure 160 feet between the base hinges, and rise to 40 feet at the crown hinge. E&F Construction Co., Inc., of Bridgeport, a 13-time Lorain owner, is the prime contractor.

The arches were erected in half sections with each lift weighing 26 tons. Here's where Moto-Crane balance, mobility and precision control paid off.

Today's pace setting, big jobs call for reliable Moto-Crane performance. Lorain dependability is backed by 40 years' experience in building rubber mounted cranes. Progressive contractors know that Moto-Cranes get to the job faster, finish the job quicker.

For details, see your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO



Big live loads require a rugged carrier—the kind Lorain builds for its Moto-Cranes. Designed to withstand the torsional stresses of heavy-duty service, these bigger, heavier carriers increase Moto-Crane output.

LORAIN®
ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 1¾- and 2-yard models.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

For letter-perfect concrete

To head the class in concrete construction you have to be a letterman today. The letters: WRDA and DAREX AEA . . . symbols of concrete quality!

REDUCE WATER with WRDA and gain all the benefits of a low water/cement ratio. You end the problems of watered-down concrete . . . yet mixes flow as smooth as country cream, compressive strengths zoom up as high as 25%.

ADD AIR with DAREX AEA, and a billion little air bubbles spread instantly through the mix, lubricating it for smoother, faster placement. As the concrete hardens, these bubbles guard against frost damage and cracking, even with repeated exposures to freezing and thawing.

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W. R. GRACE & CO.
DEWEY AND ALMY
CHEMICAL DIVISION
Cambridge 40, Massachusetts
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1959 Orders Index will hit a record 306, based on 1949 dollar volume as 100 (see chart).

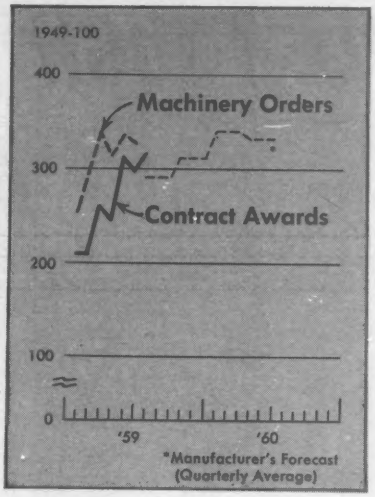
By quarters, the companies are forecasting a dip from 326 in the April-June quarter to 291 in the current third quarter.

But in the final quarter, orders are expected to climb to an index value of 311. This would bring the average for the year to 306.

The manufacturers expect the final-quarter surge to continue into next year. They foresee a rise to 341 in the first three months of 1960 from the 1959 fourth-quarter index of 311. The second quarter of 1960 is expected to decline to 332.

According to this forecast, new orders in the first half of 1960 should be 8% above the record amount booked in the same period this year.

This would also represent a big jump over the volume of 1958's first half. June orders went to 329 on the index, only a few points below May's 336. June therefore represents the fourth consecutive month in which new orders set a record for the month.



The June value brings the first six months 21% above the previous first-half record set in 1951, and tops 1958's first half by 31%.

All these figures are intimately tied to the big increase in contractors' new business. Construction contracts reported by ENR went to a weekly average of $496.5 million in July. This matches the all-time high for July, which was scored last year, and lifts the Contract Award Index to 316, based on 1949-100.

Contract volume for the first seven months now stands at $12.83 billion—6% above a year ago and only 3% below the record pace set in 1956.

The close tie-in to contractors' new business now casts some shadows over the outlook.

Construction's second largest market, under the impact of the Interstate program, is highways and bridges. A decline in this market will be reflected in machinery sales volume.

Right now, some stretchout in the Interstate appears to be taking shape (see p. 23). Extent of the stretchout, however, is not finally decided.

Homebuilders Seek Tax Changes

A drive for tax relief for builders and mortgage bankers who lose money on the sale of Federal National Mortgage Association (Fannie Mae) stock is gathering strength in Washington.

Relief is being sought on two fronts:

- The Internal Revenue Service is being asked to reconsider a ruling issued early last year. The ruling stated that the loss from Fannie Mae stock sales cannot be treated as an expense of doing business.
- The House Ways and Means Committee is considering a group of bills stating explicitly that the revenue service ruling is contrary to the will of Congress.

A big step forward was taken when Administration officials told the Ways and Means Committee they have no fundamental objection to such bills, despite some tax loss that would occur.

Officials of the Housing and Home Finance Agency, parent agency of Fannie Mae, informed the committee that while they had no opinion on the tax technicalities, they did think remedial legislation would be helpful.

Treasury officials are understood to have informed key members of Congress that they would not try to block the proposed legislation providing some minor changes are made.

The revenue service ruling that started the relief drive was issued last year. It imposed an unexpected tax burden on anyone who raises cash by selling mortgages to Fannie Mae. Some builders were informed they owed additional taxes going back to 1955.

Here's how the problem developed:

Since 1954, anyone selling a mortgage to Fannie Mae has been required to buy Fannie Mae stock. It is a requirement of doing business with the agency and is not left to the judgment of the mortgage seller. The required amount is 2% of the value of the mortgages sold, bought at a par value of $100 per share.

The actual market value of the stock on the over-the-counter market, however, is always much lower. In recent years it has ranged from a low of $40 a share up to about $64. It is currently quoted at about $59.

A homebuilder in need of cash for a new project who sells $50,000 worth of mortgages to Fannie Mae at the present time would have to buy $1,000 worth of stock at par. On the open market, however, it is worth only $590.

The whole purpose of selling mortgages to Fannie Mae in the first place is to raise cash for further building, so the common practice is immediately to sell the stock at whatever the open-market price is. Currently, $1,000 worth of stock disposed of at market prices would result in a $410 loss.

Until the revenue service issued its ruling last year, builders considered the difference in value as an expense of doing business and deducted it as an expense on their income tax returns.

But the revenue service ruled that the loss must be considered for tax purposes as a capital loss. To get any tax benefit from a capital loss, the property involved must be held at least six months. This means that builders scratching for cash are practically barred from any tax deduction at all.

Lenders are in a similar situation. Their task is to earn a maximum return on the investment of savers. This cannot be done if money must remain tied up in Fannie Mae common stock.

Both groups are seeking relief.

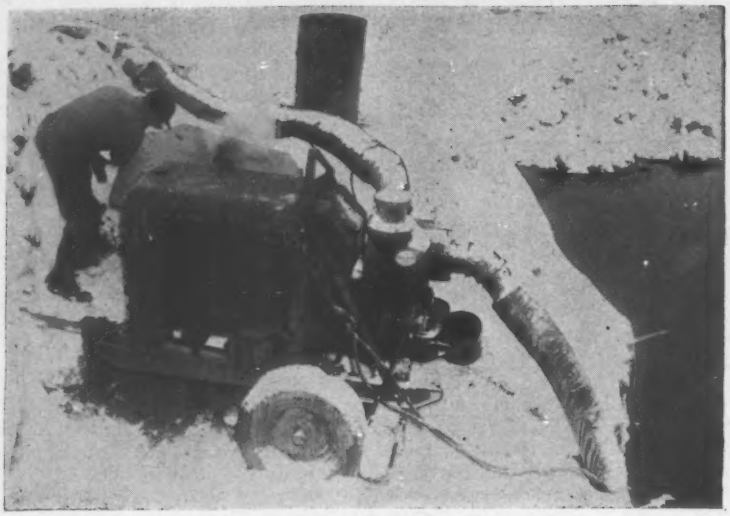
The National Association of Home Builders is asking the revenue service to reconsider its ruling. It has filed a brief with the service pointing out that the purchase of Fannie Mae stock is not an investment of capital in the ordinary sense at all. The mortgage seller doesn't buy the stock as an investment. He buys it because Fannie Mae rules say he must if he wants to sell the agency any mortgages.

Attorneys for the NAHB believe they have a precedent for their position in a ruling made by the revenue service in regard to stock in cooperatives.

The brief is being studied by tax officials, who give no indication of when they will make a decision. If they decide to reopen the matter, a new ruling will have to be drawn up and approved. That can take months.

(*B&F continued p. 114*)

DOUBLE-DUTY · TRIPLE-TOUGH



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Fair Weather

New York, Seattle, L. A., D. C. plan world's fairs

World's fairs are busting out all over. Four are currently blooming in the conversation and announcements of civil leaders and promoters in four U.S. cities—Seattle, Los Angeles, Washington and New York City.

Planned years are 1960 and 1964. Los Angeles, Washington and New York City are vying for the same year, 1964. Seattle's is booked for late 1960.

Biggest one at the moment is the fair under consideration in New York City. It's seen as a $500-million operation. Los Angeles' and Washington's plans may eventually prove to be almost as big. Seattle is a poor fourth, with cost of its "Century 21 Exposition" estimated at $50 million.

So far, New York City's has generated the strongest head of steam. Mayor Robert F. Wagner proclaimed the city is behind the event. A resolution endorsing it is before Congress.

It was the Congressional resolution that apparently helped smoke out the plans of Washington. About two hours after it was introduced, District Commissioner Robert E. McLaughlin called a press conference to announce the district plans.

Backers of this exposition are considering several sites of 2,000 acres each in the Washington area.

It will take about four years to put this World's Fair package together, according to a spokesman of Stevens Development Corporation of New York City. This company would be manager of the Washington event.

Opening of the New York fair is set for 1964—at the 1,257-acre Flushing Meadow Park in Queens County, site of the 1939-'40 World's Fair. That one cost about $155 million and returned its bondholders only 30 cents on the dollar. But it brought an estimated $4 billion worth of business to the city.

The 1964 fair is expected to bring in $6 billion worth of business.

Based on past performance, it will mean big business for contractors and engineers. The last one required engineering and architectural forces ranging at various times from 250 to 400 persons. Several hundred contractors and subcontractors employed as many as 3,000 in their forces.

In addition to the $500-million cost of the fair itself, another $85 million will be spent on supporting highway and transit system construction, says Park Commissioner Robert Moses.

Cedarapids Model H plants *cost less to buy!* Yet their low initial cost includes every quality-benefit found on popular G-Series plants except built-in running gear and self-erection. Running gear can be added, when desired, to all five H-Series models.

By its precise timing operation, the exclusive Cedarapids "Mixer Minder" (top panel above) controls each step of the batching cycle to shave valuable seconds off cycle time and permit production of extra batches per hour. The automatic weigh controls (bottom panel) are correlated with the timing action of the "Mixer Minder" to draw pre-set weights of aggregates and bitumen into the pugmill mixer. The precision of Cedarapids automatic controls permits meeting specifications, cycle after cycle, without variation.

The Most Precise Batching Controls on CEDARAPIDS MODEL H ASPHALT PLANTS mean extra batches per hour

How much do two or three extra batches per hour mean to your profit picture . . . especially when you get this additional output consistently, and with *no* additional maintenance or operating costs over slower, smaller-capacity plants? You're right! Cedarapids all-automatic bituminous mixing plants *do* cut your cost per ton to put extra profit in your pocket! It will pay you to get the full story about Cedarapids automatic operation that has been job-proved for 14 years. Ask your Cedarapids Dealer about the many other Cedarapids quality-benefits you get with both the portable stack-up H-Series and the 100% portable G-Series models.

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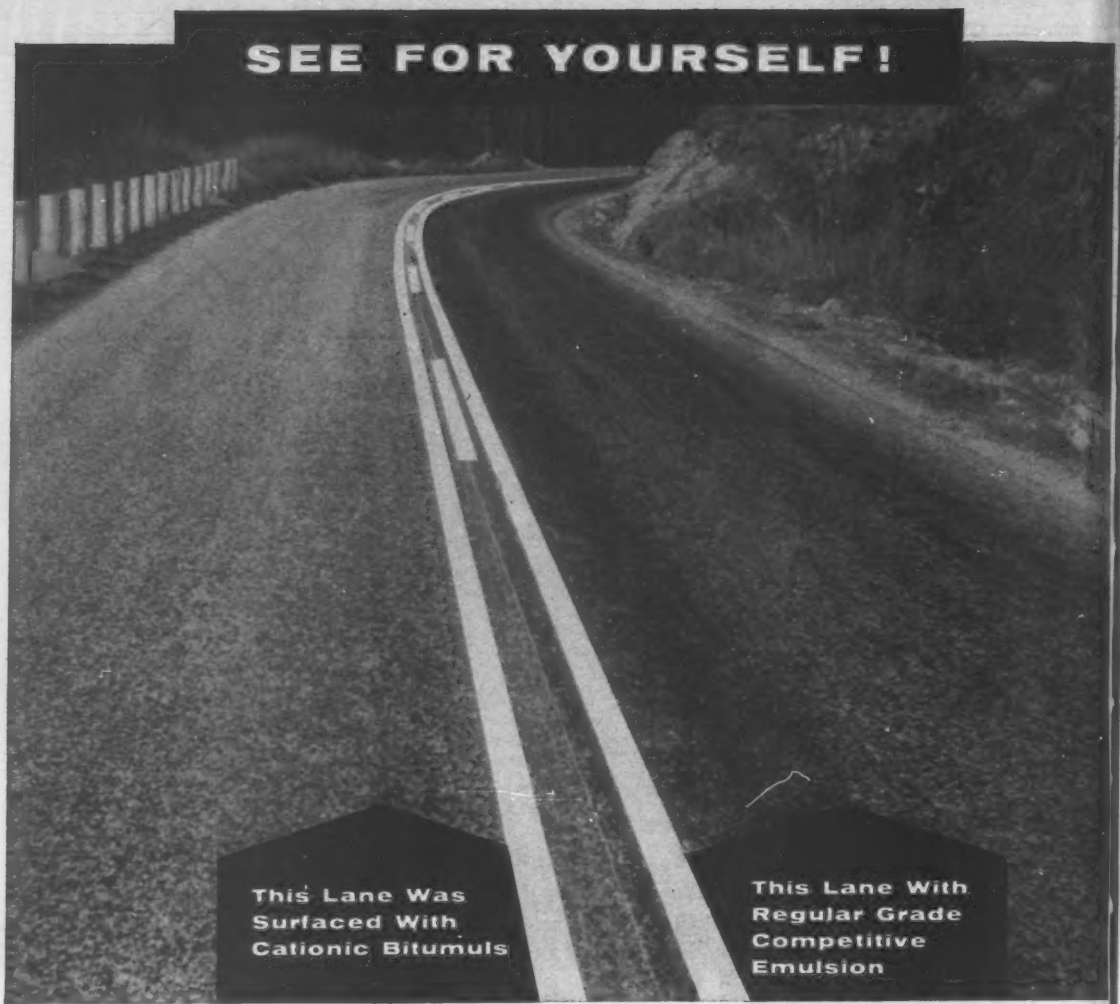
- Unique plant breather system eliminates leakage of dust from batcher and mixer to prevent escape of valuable fines. Assures ideal working conditions



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This photograph gives visible proof of the superior performance of Cationic Bitumuls. The picture was taken on a 25-mile test section of highway in North Carolina.

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Congress Sharpens Basic Issues

Construction industry conflicts alone could kill labor legislation if bills go to joint conference committee

None of the construction industry's Taft-Hartley problems was solved by House passage of the Landrum-Griffin labor reform bill last week (see p. 23). And this fact alone may still defeat the chances of any labor legislation.

The reasons are threefold:

• **The basic issue for those in the construction industry is not labor reform at all.** It is whether the law can or should be reshaped to fit some of the peculiarities of the industry. All the bills considered so far have attempted to do this in one way or another. The furor and conflict over pre-hire labor contracts, certifications without elections and secondary boycotts fall squarely within this area.

• **The substantive conflicts between the House (Landrum-Griffin) and Senate (Kennedy) bills are great enough to create a conference deadlock.** The no-man's land and hot-cargo issues are two more examples of this conflict.

• **The intense lobby pressures of business and labor will dog the bills** if they go to conference and will promote the chances of a deadlock. Last week, for example, a large group of New Jersey contractors appeared on Capitol Hill asking for tougher provisions in the House bill, revisions in the Kennedy bill and inclusion of a specific ban on featherbedding.

Both bills contain a number of sleepers. The two that create the most confusion relate to union representation and boycotts.

The labels for the representation issue are "pre-hire" (in the Kennedy bill and endorsed by labor) and "certification without election" (in the Griffin bill and endorsed by many contractors). They represent alternative solutions to a problem on which there is no disagreement. The first is criticized as closed shop, the second as illusory. Both, however, are subject to the closed shop criticism because each necessarily permits the execution of union contracts before most of the work force is assembled.

Unlike the pre-hire approach, the certification method would still leave in limbo contractors and unions without a prior history of bargaining. And it would not strengthen, as would the pre-hire approach, the legal position of project agreements and national labor contracts, which are essential to the welfare of many contractors.

The pre-hire approach, as now set forth in the Kennedy bill, would realistically shorten the union shop waiting period and remove some of the legal confusion that now exists on the union referral and hiring hall problems. In principle, the pre-hire approach has been approved by the U. S. Senate three times—the last time on a vote of 90 to 1.

The boycott issue is just as complicated and is further confused by its interrelationship with the hot-cargo problem.

Relaxation of the boycott ban at construction sites went down the drain with the defeat of the Elliott and Shelley bills. The antithesis appears in the Eisenhower-supported House bill, although the President has often plugged for the Elliott exemption.

Among other things, the House bill specifically outlaws boycotts as organizational weapons by banning picketing for organizational purposes where the union cannot show sufficient interest on the part of the workers it wants to organize. And it makes pressure on employers as well as employees a boycott offense.

The House bill, at the same time, outlaws all hot-cargo agreements (for which the boycott is a natural enforcement tool) and makes null and void all such clauses now appearing in construction and other industry labor contracts. The Kennedy bill concerns itself with the common carrier-teamster problem only.

These conflicts, coupled with the two bills' diametrically opposed federal-vs-states' rights approach to the no-man's land issue, indicate two things:

• The 1959 debate on labor legislation is far from over.

• There will be widespread dissatisfaction with any compromise.

Outlook: More Action by Labor

The setback received by organized labor on the floor of the House of Representatives last week will become in union eyes a symbol of the continuing power of "big business" to dictate the rights and to shape the welfare of the working man.

It promises to increase the strife in labor-management relations and to set in motion a union campaign of political action greater than the nation has ever known.

For the American public, the question is not whether it likes it or not, but whether political action by organized labor is wrong or illegal.

The complaints are mounting.

House Republican leader Charles A. Halleck (Ind.) complained at the start of last week's debate that "Mr. Hoffa's people are here with all kinds of threats, trying to get the Hoffa bill through."

The threats, Rep. Halleck said, were "political recriminations, defeat at the polls, the things that everybody who has been around here knows about."

The U. S. Chamber of Commerce, too, says "the AFL-CIO, Jimmy Hoffa and the building trades bosses have been exerting the greatest pressure ever seen in Washington."

Mr. Hoffa promises more to come.

He does not cite the "consent of the governed" or the "right of the people . . . to petition the government" provisions of the Declaration of Independence and the U. S. Constitution. He suggests, instead, that what is sauce for the goose is sauce for the gander.

Starting with the assertion that "business has gone into politics in a big way," he says: "Organized labor should have same rights to take part in the American political process as the Chamber of Commerce and the National Association of Manufacturers. Right now we are in the midst of one of the greatest anti-union crusades in history. If we don't fight back, we will die."

The political action program now being considered by the teamsters union somewhat parallels the increasingly effective COPE program of the AFL-CIO. Tentative plans, however, call for a national legislative director who will coordinate "ballot-box" activity in the field with legislative activities on Capitol Hill.

Joint goals are the election of "pro-labor candidates" at all levels of government and "a direct pipeline" to Congressmen and Senators for rank-and-file members. The latter is viewed as "an antidote" to the "constant" business pressure on Congress.

(*Labor continued on p. 118*)

Strikes Don't Halt Wage Climb

Wage increases hit 37.5 cents an hour. Some strikes settled. Alaska, Glen Canyon tie-ups continue.

Most entries on the construction industry's collective bargaining balance sheet in recent weeks have not been favorable ones—at least from the contractors' point of view.

Although strikes that interrupted industry operations in Arizona, New York City, Milwaukee, Youngstown and Sacramento have been settled, tie-ups still persisted last week in Alaska, Glen Canyon and Butte, Mont., to mention only a few areas. And the settlements that have been reached, either with or without strikes, have added another three to 37.5 cents an hour to current labor costs.

Teamsters working for sand, gravel and ready-mix firms in New York City, for example, won an immediate pay increase of 37.5 cents an hour in a two-year contract. This gives the union members a scale of $3.50, which adds up to $140 for a 40-hour week. They get no increase, however, the second year. The settlement was reached after a three-and-a-half-week strike that idled over 50,000 construction workers and halted $400 million worth of work.

In Arizona, the operating engineers, who had tied up construction work on a statewide basis for 58 days, settled on a three-year contract that calls for a 7.5% pay increase each year. The increase is based on pre-strike scales that ranged from $2.60 to $3.43 an hour.

Annual pay hikes of 10 cents an hour for each of the next three years, on the other hand, were accepted by Milwaukee teamsters, who had struck members of the Allied Construction Employers' Association for 17 days.

Among other settlements are these:

- Trenton, N. J., carpenters—a 17.5-cent increase in an 11-month contract, yielding a new scale of $3.90 an hour, plus 10 cents in health and welfare.
- Sacramento, Calif., glaziers—17.5 cents now and 17 cents next year in a three-year contract.
- Plasterers in five California counties—25 cents now and 20 cents next year, making the new scale $3.85 an hour, plus fringe benefits of 10 cents each for vacations, health and welfare and promotion programs.
- Youngstown, Ohio, plumbers—three cents now in pay and 10 cents more for pensions in October under a one-year contract.
- Laborers in Casper, Wyo.—three cents now and two cents more in December.

Less run-of-the-mill provisions in some of the contracts include:

- When the average earnings of the top 75% of an employer's seniority list, in the case of the Milwaukee teamsters, falls below $75 a week, the employer must reduce his work force on the basis of seniority. Workers receive holiday pay for holidays that fall on Saturday.
- Glaziers in Sacramento will be paid overtime at the rate of time and a half for the first two hours after eight hours Monday through Friday and Saturday morning, but double time at other times.
- Although the new contract for common laborers in Casper, Wyo., will expire next May, it is agreed that during the next five years the Casper scale for building laborers and hod carriers will either remain at $2.45 an hour, or increase when and if the Rocky Mountain regional average scale rises.

Inflationary Wage Increases

Roger M. Blough, Chairman of the Board of U. S. Steel Corp. explains inflationary increases this way:

"Many people mistakenly believe that a steel wage increase would not be inflationary if it did not result in an increase in steel prices; and thus we hear much debate about whether the companies could 'afford' to boost wages and benefits another notch.

"But the fact is, of course, that whether steel prices rise or not, inflationary wage increases in construction, motors, steel, oil, or other major industries ripple out over the entire economy as other unions strive to 'catch up' to the new high level. And as these rising employment costs spread, they force higher costs and higher prices everywhere, for employment costs—direct and indirect—represent more than three-fourths of all production costs in American industry . . .

"That is why we in the steel industry have sought and bargained for a settlement that would involve no increase in employment costs—or at least sustainable ones which could be met—in the end—by the elimination of wasteful practices arising out of various provisions in our old labor agreements."

Construction Employment Hasn't Recouped Its Loss

Employment in contract construction rose by 52,000 last month to 3,032,000, according to the U. S. Department of Labor.

The new figure is an improvement over July a year ago (2,882,000), but is still less than the corresponding figures for 1957 (3,275,000) or 1956 (3,270,000).

This is part of a general picture that indicates the effects of the recession are far from over for the nation's workers. According to the Labor Department:

- Factory employment is still 300,000 below its July 1957 level.
- Unemployment is 700,000 higher than it was two years ago.
- Long-term unemployment (15 weeks or longer) is 320,000 above the July 1957 amount.
- Insured unemployment was up in 30 states.
- An estimated 125,000 exhausted their state unemployment benefits in July.

On the brighter side, total employment rose by a quarter of a million between mid-June and mid-July to a record 67.6 million.

Union Field Surveyors Strike Civil Engineers

Operating Engineers Local 12, representing 200 field surveyors, is striking against the 25-member San Diego, Calif., Council of Civil Engineers and Land Surveyors.

Union officials said the strike was called because 12 firms in the Engineers Council recently joined the Associated General Contractors of America. The AGC then notified the union that the 12 firms come under existing coverage and that a separate labor contract is not necessary.

The companies involved called the strike illegal.

Engineering Unions

ESA units move to exclude nonprofessional members

For several years, the Engineers and Scientists of America—a national federation of engineering unions with a total dues-paying membership of about 18,000 professional engineers and scientists—has been trying to purge its ranks of nonprofessional members.

The latest move in this direction has come from one of ESA's member unions—the Seattle Professional Engineering Employees Association.

SPEEA, which represents 8,800 engineers at Boeing Airplane Co. and Continental Can Co. in Washington, took two steps to exclude nonprofessionals from its membership: It negotiated an agreement with Boeing in which the company agreed to stop assigning employees to SPEEA classifications unless it was willing to claim exemption for those employees as professionals under the Wage-Hour Law; and it tightened its membership qualifications to include:

- A B.S. in engineering or science, or . . .
- Registration as a professional engineer, or . . .
- Completion of all the fundamental courses normally included in the first two years of an engineering or science curriculum, plus engineering experience equivalent to the remainder of a B.S. program.

These new criteria make SPEEA membership qualifications similar to those of ESA.

Another ESA unit—the Southern California Professional Engineers Association—also took action recently to "purify" its membership. With the cooperation of its employer, Douglas Aircraft Corp., the union helped set up a separate bargaining unit for nonprofessional employees in the company.

The other ESA unit trying to rid itself of nonprofessional members is the Council of Western Electric Professional Employees—National, which represents engineers at Western Electric Co. This group has participated in hearings before the New York office of the National Labor Relations Board for more than two years in an attempt to keep the company from diluting the union with nonprofessionals.

These moves taken by the individual unions are part of a continuing program of ESA, whose aim is to make all ESA units purely professional. All ESA units, other than SPEEA, CWEPE-N and SCPEA, are now composed entirely of professionals.

REDA SUPPLIES 21,000 GALLONS OF WATER PER HOUR
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Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

The Kimbell people chose REDA for:
- Dependable water supply
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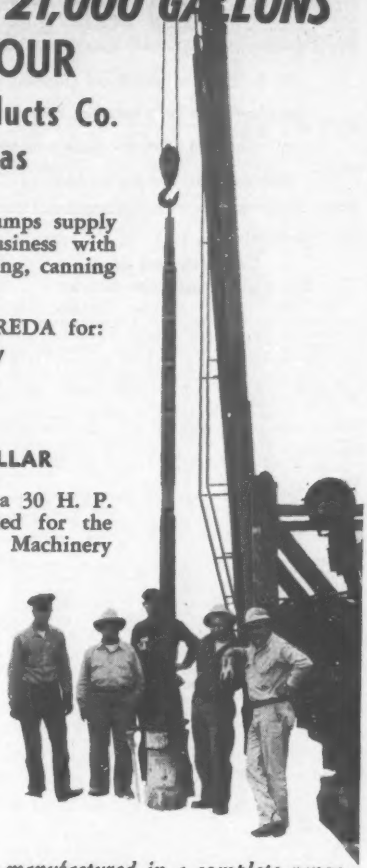
The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.

INSTALLATION DATA:
PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)
CASING: 10-inch steel casing
POWER REQUIRED: 440 volts a. c., 3 phase, 60 cycle
MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day
WATER SUPPLIED BY REDA: 21,000 gallons per hour
PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.



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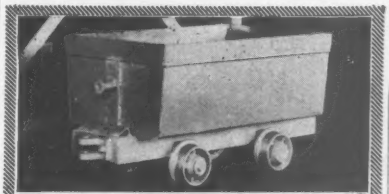

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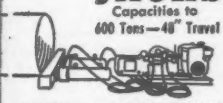

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OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: September 15, 1959

Construction of Sewage Treatment Works

The City of Fort Wayne, Indiana, will receive sealed Proposals for the construction of Sewage Treatment Works Additions until 9:00 A.M. Indiana Standard Time (Central Daylight Saving Time) on the 15th day of September, 1959, at the office of the Board of Public Works, City Hall, Fort Wayne, Indiana.

All Proposals received will be publicly opened and read aloud in the office of the Board of Public Works at the City Hall, Fort Wayne, Indiana, at 9:00 A.M. Indiana Standard Time (Central Daylight Saving Time) on September 15, 1959.

The Contract Documents including plans and specifications are on file and available for inspection at the office of the Board of Public Works of the City of Fort Wayne, Indiana.

Copies of documents including plans and specifications for review or bidding purposes may be obtained only from the Board of Public Works by depositing $90.00 for each set of documents so obtained. Copies of documents will not be issued after September 10, 1959.

The full amount of the deposit for one set of documents and one-half of the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the City.

Equipment manufacturers, subcontractors, and others who do not submit formal proposals to the City will be refunded one-half the amount of the deposit for all sets returned within ten (10) days after the opening of bids.

A certified check, cashier's check, or bank draft payable to the City of Fort Wayne, Indiana, or a satisfactory bid bond executed by the bidder and a surety company in an amount not less than five per cent (5%) of the bid, shall be submitted with each proposal.

No bid shall be withdrawn after the opening of proposals without the consent of the Board of Public Works for a period of thirty (30) days after scheduled date and time of opening bids.

The Board of Public Works of the City of Fort Wayne, Indiana reserves the right to reject any or all proposals and to waive any informalities or irregularities in the bids received or to accept any proposal which is deemed most favorable to the City.

The successful bidder will be required to furnish a satisfactory Performance Bond in the sum of the full amount of the contract.

The improvements on which proposals are solicited consist of the construction of additional treatment plant structures and the furnishing and installation of equipment at the site of the existing Fort Wayne Sewage Treatment Works.

The improvements consist of construction of additional pumping facilities, primary tanks, aeration tanks, final tanks, digesters, digester control building addition, together with all necessary pumps, blowers, engines, meters, gauges, piping and appurtenances.

Plans and Specifications for this project were prepared by Consoer, Townsend and Associates, Consulting Engineers, 360 E. Grand Avenue, Chicago 11, Illinois.

Dated at Fort Wayne, Indiana
this 14th day of August, 1959

CITY OF FORT WAYNE, INDIANA
BOARD OF PUBLIC WORKS
By E. J. Gallmeyer
John H. Cooper
Orin M. Darling

ATTEST:
Kenneth McGraw
Clerk

Bids: October, 1959

Kingdom of Thailand Royal Irrigation Department Bangkok, Thailand

INVITATION FOR BIDS—NO. YS-2-10

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed written bids for furnishing and delivering the following goods, equipment, and materials either fob Contractor's shipping point or cif Bangkok Wharf, Thailand, for the Bhumiphol Dam and Power Plant, Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents, Invitation for Bids—No. YS-2-10, for:

Furnishing nine (9) 3.54 meter by 4.62 meter draft tube bulkhead gates and twenty four sets of draft tube gate frames and guides. The gate frames are to be fabricated of stainless clad plates.

Bids will be issued in late August, 1959, and will be opened in October 1959. Copies of Contract Documents, Invitation for Bids YS-2-10 may be obtained by qualified Bidders on written request on Bidder's letterhead, addressed to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
1940 West Mississippi Avenue
Denver 23, Colorado

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U.S. $10.00 for each copy of the Contract Documents requested. The remittance is nonreturnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

Bids: August 27, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of August 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Dusee Street, Watertown, N. Y.		
Greenville, Ontario, Canada	OBA 59-6	Ogdensburg Bridge: Canadian Approach Roadway

Miles	Type	Deposit	Estimated Cost of Work
0.43	Asphalt Concrete, Type 1A Pavement Plans	U.S. $20,000 U.S. $5	U.S. $362,000

NOTE:—Plans and Proposals for Contract No. O.B.A. 59-6 will be available at H. H. L. Pratley, Cons. Engineer, 909 Drummond Building, Montreal, Quebec, Canada and at Modjeski and Masters, Cons. Engineer, Forster at Sixth, Harrisburg, Pennsylvania, as well as the New York State Department of Public Works' Offices listed.

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New Yorks State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

U. S. Government

District of Columbia—Building Construction—Dept. of Bldgs. & Grounds, August 5, 1959. CONSTRUCTION AND COMPLETION OF THE REPAIR SHOP, RECORD CENTER AND WAREHOUSE, 2000 Adams Place, N.E., Washington, D. C. Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Section, Procurement Office, D. C., Rm. 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 2:00 PM, EDT, September 2, 1959, in Room 424, 499 Penn. Ave., N.W. (INVITATION NO. C-6029-B)

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5227) will be received at Superior, Nebraska, until 10 a.m., Central Standard Time, September 22, 1959, for furnishing labor and materials for earthwork and structures for White Rock Extension Canal, Station 307+90.4 to End, and laterals and drains, Bostwick Division, Nebraska-Kansas, Missouri River Basin Project. Location south of Republic, Kansas. Principal items are 383,000 cu. yds. excavation; 730 cu. yds. concrete; 16,700 lin. ft. precast concrete pipe; various items steel pipe, metal gates, and miscellaneous metalwork; and other work. Completion time 450 days. For particulars, address Bureau of Reclamation, P. O. Box 431, Superior, Nebraska; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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OFFICIAL PROPOSALS

Bids: August 27, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 27th day of August 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Herkimer (Rte. 58)	R.C. 59-135	Utica-Frankfort, Pts. 1, 2 and 3, S.H. 5209-S.H. 359 and S.H. 14; Ilion-Frankfort, S.H. 5219	6.96	Asph. Conc. Type 1A Pavement	$12,000 Plans $5	$11,000
DISTRICT No. 3; E. E. TOWLSON, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga & Onondaga (Rte. 31)	R.C. 59-118	Port Byron-Weedsport, S.H. 5609; Auburn-Weedsport, S.H. 1317; Weedsport-Jordan, Pts. 1 & 2; S.H. 5654, 5630	8.87	Asph. Conc. Pavt.	$16,000 Plans $5	276,000
Cayuga, Seneca & Thompson	R.C. 59-119	S.H. 1923, 454, 1878, 926, 8067, 1188, 8407, 1676 (Rte. 38); S.H 687, 1173, 685 (Rte. 104A), S.H. 8247, 852 (Rte. 104), S.H. 1717, 1750 (Rte. 176), S.H. 614 (Rte. 38A), S.H. 1173 (Rte. 326), S.H. 5244 (Rte. 34B), S.H. 5012 (Rte. 34), S.H. 50-13 and 8519 (Rte. 90), S.H. 8363, 1921, 8386 (Rte. 89), S.H. 5282, 326, (Rte. 96-414), S.H. 616 (Rte. 96), S.H. 1189 (Rte. 327), S.H. 681, 682, 5214 (Rte. 12-392), S H. 1433 (Rte. 222), S.H. 72, 338, 1431, 1004 (Rte. 79-330) and S.H. 5575 (Rte. 227)	....	Roadside Development	$800 No Plans Proposal $2	14,000
Onondaga (Rte. 31)	R.C. 59-120	Jordan-Baldwinsville, Pt. 2, S.H. 8107	3.86	Asph. Conc. Type 1A Pavt.	$7,000 Plans $5	126,000
Onondaga	R.C. 59-121	S.H. 9045, 9047 (Rte. 173-20N), S.H. 9354 (Rte. 20SY) and S.H. 5567 (Rte. 5)	....	Roadside Development	$200 No Plans Proposal $2	4,000
Oswego (Rte. 57)	R.C. 59-122	Fulton-Three Rivers, Pt. 1 and Pt. 2, S H. 5251 and S.H. 5276	4.27	Asph. Conc. Pavt.	$8,000 Plans $5	140,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	M 59-6	Br. E129 Church St., Town of Perinton; Br. E-144, Clinton Ave., Town of Brighton; Br. E-173 Gillette Rd., Town of Ogden and Br. E-175 Martha St., Town of Ogden	....	Clean & Paint. 4 Bridges	$800 Plans $10	15,000
Orleans	M 59-9	BR E-129 Brown St., Albion and Br. E-202 Gaines Basin Road, Gaines	....	Clean & Paint. 2 Bridges	$500 Plans $10	9,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus, Erie, & Niagara (Rtes. 354, 78, 18, 17, 16)	R.C. 59-136	Br. No. 1, S.H. 371; Br. No. 3, S.H. 924; Br. No. 4, S.H. 1754; Br. No. 1, S.H. 1854 and Br. No. 2, S.H. 8086	....	Clean & Paint. 5 Bridges	$2,400 No Plans Proposal $2	44,000
Cattaraugus Chautauqua Erie & Niagara	R.C. 59-123	S.H. 9072, 9031, 1381, 8252, 9038, 9300, 1024 (Rte. 39), S.H. 1469, 9292 (Rte. 428), S.H. 1471, 1026 (Rte. 60), S.H. 5320, 5434, 5596, 5263A, 5217A, 5217, 5053, 5151 (Rte. 17), S.H. 1617, 1169, 9028, 1380A (Rte. 17J), S H. 8115, 8212, 1742, 8275, 8255, 1709, 1305 (Rte. 98), S.H. 8149, 5259, 9212, 8416 (Rte. 242), S.H. 1509 (Rte. 219), S.H. 48-15 (Rte. 353), S.H. 5220 (Rte. 62), and S.H. 263, 264, 5550 (Rte. 16-78)	....	Roadside Development	$1,000 No Plans Proposal $2	19,000
Chautauqua	C 59-13	City of Jamestown: North-South Arterial Highway (Washington St. Bridge)	0.04	Demolition of Buildings	$300 Plans $5	6,000
Niagara	M 59-7	Br. E-219 Wruck Rd. Town of Royalton; Br. E-224 Harrington Rd. Town of Lockport, Br. E-232 Pine St., City of Lockport and Guard Gate No. 17 Erie Canal Town of Royalton	....	Clean. & Paint. 3 Bridges and 1 Canal Guard Gate	$1,400 No Plans for Proposal $2	26,500
DISTRICT No. 6; J. H. THOMAS, District Engineer, State Office Bldg, 30 West Main Street, Hornell New York						
Steuben (Rte. 70)	R.C. 59-124	Big Creek, Pt. 3, S.H. 1000	1.59	Asph. Conc. Pavt.	$5,000 $35,000	88,000
Steuben (Rte 53)	R.C. 59-125	Kanona-Prattsburg, Pt. 1A, Pt. 1B and Pt. 2, S.H. 1656, 1624 and S H. 1474; Prattsburg-Italy Hill, Pt. 1, S.H.1594	9.39	Asph. Conc. Pavt.	Plans $5	630,000
DISTRICT No. 7; R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
DISTRICT No. 8. K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Putnam	TSP RC 59-2	Taconic State Parkway Sects. 2 and 3	6.34	Asphalt Concrete Pavt.	$6,000 Plans $5	110,000
Westchester	R.C. 59-127	S.H. 9206, 84-56, 8457, 5361, 5364A, 5482, 9266, 9364, (Rte. 9), S.H. 20, 35, 5003, 5146, 5298A, 9273, 5464 (Rte. 22), S.H. 1015, 5226, 9247 (Rte. 120), S.H. 1456 (Rte. 119-120), S.H. 9256, 901 Pts. 1 and 2 (Rte. 120A), 0.H. 148 (Rte. 118), S.H. 780 (Rte. 127), S.H. 5719 (Rte. 1), S.H. 331, 332 (Rte. 35-202), S.H. 9246 (Rte. 10A), S.H. 1167, 1053, 34, 52 (Rte. 9A), S H 519 (Rte 117) S H 1570 (Rte 100) and S H 645, 10, 134 (Rte 125), S H 9254, 1308 (Rte 141)	....	Roadside Development	$1,000 Plans $5	18,000
DISTRICT No. 10; M. E. GOUL; District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau (Rte. 27)	T.C. 59-4	Conduit Boulevard, Pt. 3, S.H. 1699A and S.H. 1699C Conduit Boulevard, Pt. 4, S.H. 1699B, Conduit Boulevard; Pt. 3A, S.H. 1953	10.98	Furnish and Install Progressive Traffic Signal System	$13,000	236,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: September 15, 1959

Contract LT-800.029

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
RECONSTRUCTION OF BULKHEAD
AT WEST 38TH STREET

Sealed proposals for the reconstruction of the section of bulkhead over the third tube of the Lincoln Tunnel at West 38th Street, Manhattan, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, September 15, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, August 20, 1959

Bids: August 27, 1959.

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Standard Time on August 27, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON GOWANUS EXPRESSWAY, FOURTH AVENUE TO 92ND STREET, INTERSTATE ROUTE 512. PROJECT 1-278-1 (3) 9, KINGS COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-143.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.

(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $30,900.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: August 27, 1959.

Reconstruction Work

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M., D.S.T. on August 27, 1959 by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 59-4 for Reconstruction of a Portion of the Apron and the Northeast Wing Wall of Pier No. 5 at Movable Dam No. 4, Lock 8-E, Town of Glenville, Schenectady County, New York
Engineer's Estimate for M 59-4 is $325,000.00

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor
The Gov. Alfred E. Smith State Office Bldg., Albany, New York.

(b) Department of Public Works,
270 Broadway, New York City,
New York.

(c) In addition to the above mentioned offices, plans, maps and specifications for Contract M 59-4 may be examined and obtained at the office of Mr. G. L. Nickerson, District Engineer,
353 Broadway, Albany 1, New York.

The deposit for Plans and Proposal Forms for Contract M 59-4 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for M 59-4 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $17,000. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any and all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: October, 1959

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

INVITATION FOR BIDS—NO. YS-2-11

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed written bids for furnishing and delivering the following goods, equipment, and materials either fob Contractor's Shipping point or cif Bangkok Wharf, Thailand, for the Bhumiphol Dam and Power Plant, Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents, Invitation for Bids—No. YS-2-11, for:

Furnishing two (2) 2,136 meter (84 inch) free discharge valves, complete with operating mechanism, and appurtenant accessories to operate under a maximum static head of 120 meters (393 feet). The valves shall be of the hollow-cone or hollow-jet type.

Bids will be issued in August, 1959, and will be opened in October 1959. Copies of Contract Documents, Invitation for Bids YS-2-11 may be obtained by qualified Bidders on written request on Bidder's letterhead, addressed to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
Denver 23, Colorado

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U.S. $10.00 for each copy of the Contract Documents requested. The remittance is nonreturnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

OFFICIAL PROPOSALS

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SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Asst. Prof.—To teach undergrad. courses in transportation, surveying, and fluid mechanics. Salary open. Civil Eng., University of No. Dak., Grand Forks.

Sanitary Engineers—with at least two years' experience in design and development of sewerage and waste treatment systems or sewage treatment equipment sales, for customer liaison assisting sales representatives. Location midwest and south central. Yeomans Brothers Company, 1999 N. Ruby St., Melrose Park, Ill. Fillmore 4-9600.

One senior mechanical engineer and one senior electrical engineer fully experienced in all phases design of mechanical and electrical respectively for all types of buildings. Mechanical engineer to have thorough knowledge of air conditioning design. Both positions permanent with established consulting engineering firm in south Florida. Send complete resume of education, experience and salary requirements. P-2260, Engineering News-Record.

Civil Engineer minimum 5 years experience highway design for established consulting firm. Location Washington, D. C. Submit resume. P-2270, Engineering News-Record.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Foundation contractor requires young, enthusiastic engineer with some field and estimating experience to work in promotion of new contracts. Soils and piling background desirable. Middle Atlantic location. Send qualifications, salary requirements, availability to: P-2332, Engineering News-Record.

Wanted—Experienced Party Chief, licensed land surveyor preferred. Excellent opportunity with well known Consulting Firm in Illinois. State education, experience and required salary. Reply to P-2292, Engineering News-Record.

Graduate Civil Engineer with at least two years experience in layout of water mains, small pumping stations and filter plants. Send resume of experience, references, salary desired, date available to Gannett Fleming Corddry & Carpenter, Inc., Box 366, Harrisburg, Penna.

(Continued on opposite page)

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

SEPTEMBER 2ND ISSUE CLOSES AUGUST 24TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

WANTED
To Whom It May Concern:

We are a corporation doing approximately $10,000,000.00 worth of road, bridge and dam construction work annually; have spent much time in trying to break in supervision, have found the effort costly and futile. We are now looking for top-notch supervision: honest, ambitious, *intelligent*, preferably young, to grow with a growing organization. We are prepared to pay top money for the right man. Diversified experience not necessary, prime requisite is right attitude and brains. Work is in the New England States and New York State. Reply to

P-2291, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

RESIDENT ENGINEER
FOR GRAIN COMPANY

Resident Engineer for construction of grain elevator in Minnesota. Age to 40. Submit full particulars of education and experience. Indicate salary desired.

P-2294, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ASSISTANT CHIEF ENGINEER

C. E. experienced in structural steel detailing and design, checking and estimating to understudy for Chief Engineer with long established structural steel fabricator. Submit detailed resume and photograph.

C. E. MORRIS COMPANY
745 Curtis Avenue Columbus, Ohio

• POSITIONS VACANT
(Continued from opposite page)

General Superintendent, shift superintendents and concrete superintendents with extensive experience in concrete dams and powerhouse construction. Send complete resume with photograph and salary desired to Box 296, Main Post Office, Niagara Falls, New York, or telephone Butler 4-0492, Extension 10 for interview.

Wanted: Young graduate Civil or Hydraulic Engineer interested in overseas assignment with consulting firm. State education, background and experience. Reply fully to P-2359, Engineering News-Record.

Contractors project engineer, also General Superintendent, experienced large dam construction. Overseas assignment, good salary and living conditions. Mail full particulars. P-2376, Engineering News-Record.

Wanted—Sanitary Engineer for department head of established firm in Midwest. Prefer age between 35 and 55. Applicant should have had responsibility of design of sewage and water treatment plant. Salary five figures with fringe benefits. Answer P-2353, Engineering News-Record.

Construction Superintendent: Immediate opening. We are seeking an experienced man capable of assuming complete responsibility for road construction projects ranging from $500,000 to $1,500,000. Opportunity to purchase partial interest will follow proven ability. CE degree preferred. Must be experienced in estimating and willing to relocate in central Vermont. Salary open. Reply to: Baslow Construction Corp., 45 Center St., Rutland, Vermont.

The Commonwealth of Pennsylvania Seeks

HIGHWAY & BRIDGE DESIGNERS

with C.E. degree and 1 to 5 years of design experience.

• JUNIOR DESIGNERS • DESIGNERS • SQUAD LEADERS • SUPERVISORS

Salaries from $5500 to $9000 per year based upon qualifications.

Write for application forms. Filing date for Civil Service examinations Sept. 23.

PERSONNEL, PA. HWYS. DEPT., HARRISBURG, PA.

COMPUTER ENGINEER

Registered Graduate Civil Engineer with 5-year minimum design experience, in highways and bridges. Some computer experience desirable. Responsible, permanent position in our Bendix G-15 Computer Division. Salary open. Send resume to:

RICHARDSON, GORDON AND ASSOCIATES
3 Gateway Center, Pittsburgh 22, Pennsylvania

• POSITIONS VACANT

Draftsman for work in connection with preplanning on large building construction projects. An excellent opportunity for a capable man to grow with a large and expanding national construction company. Submit complete resume covering experience, education, references, personal data and salary requirements to Personnel Director, Blount Brothers Construction Company, P. O. Box 949, Montgomery, Alabama.

Young engineering firm, specializing in industrial and commercial buildings, operating in rural community Upstate New York (excellent fishing, hunting and retirement area), seeks connection with retired Chief Engineer to supervise office part-time/full-time basis. P-2400, Engineering News-Record.

City Engineer, City of Arcata, Humboldt County, Calif., Salary $500-$600, Desired qualifications: Reg. C. E., some municipal experience. Apply City Manager, Arcata, Calif.

Soils Engineering—Large Chicago Consulting Engineering firm desires to employ a young, graduate Civil Engineer to assist in the soils investigation of large civil engineering projects. Applicant should be experienced in soil boring and sampling techniques and report writing. Position will involve travel. Send complete resume, including salary desired and three references to P-2398, Engineering News-Record.

• POSITIONS WANTED

Equipment-Superintendent—for overseas assignment period lots of foreign experience and a worker with ability. PW-2200, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Project mgr.—Const. Supt; Age 52; 30 yrs const. experience, will consider any type project; best references; $15,000 min.; available Sept. 1; PW-2335, Engineering News-Record.

Bridge Supt. or Foreman. Take full charge. PW-2325, Engineering News-Record.

Manufacturer's District Representative
North East Territory

Excellent opportunity—Experienced in underground excavating equipment.

THE PARSONS COMPANY
Division of Koehring Company
NEWTON, IOWA

ASSISTANT STREET SUPT.
SAN DIEGO, CALIFORNIA

Salary to $786 per month. Age to 52. Equivalent to degree in civil engineering, public or business administration and 3 years supervisory or administrative experience in street construction required. Excellent promotional opportunity available. Write to: City Civil Service, Room 453, Civic Center, San Diego 1, California.

• POSITIONS WANTED

Bridge & Structural Designer. Long experience on railroad and highway bridges, steel-concrete industrial structures. Cornell grad. Location mid-west or California. PW-2310, Engineering News-Record.

Civil Engr.—12 yrs. experience, reg. P.E. & L.S., desires responsible position with consultant or municipality in southwest area. Available October. PW-2301, Engineering News-Record.

Construction Executive or Project Mgr. 25 years experience covers Concrete, Earth Dams, Power houses, Bridges, Tunnels and Marine Construction. Qualified to Estimate, Plan and Construct in the U. S., South Amer. and Middle East. PW-2271, Engineering News-Record.

Schools Construction Supervisor, Engineer, currently employed by Owners & Architects jointly, $9,600, on several schools but seeking change of location to California or Southwest. PW-2269, Engineering News-Record.

Dam Engineer 29 years on design and construction of hydroelectric and irrigation works. Both Federal and private agencies; overseas and domestic. Age 54, married. Desires management executive or administrative position. PW-2186, Engineering News-Record.

Pilot—Charter Pilot (29 years of age— married—three children) desires change to Corporation Pilot or Co-Pilot. 3500 hours flight time—Commercial License—Single & Multi-Engine—Instrument — Instructor ratings. Willing to re-locate. Resume on request. Roy F. Peacock—3821 Golden—Arlington, Calif.

(Continued on the following page)

DISTRIBUTOR AVAILABLE

DISTRIBUTOR OF COMPLETE LINE HEAVY DUTY TRUCK AND TRACK MOUNTED EXCAVATORS IN NEW YORK CITY AREA INTERESTED TAKING ON ADDITIONAL EQUIPMENT USED BY HEAVY CONSTRUCTION INDUSTRY—

RA-2115, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• POSITIONS WANTED
(Continued from preceding page)

Diving & Salvage Specialist-10 yrs. Experienced in marine surveys; underwater inspection & repair of bridges, pipelines, bulkheads & cables, etc. Handle own diving, drafting & instrument work. 5½ yrs as chief pilot for state agency; Forestry Graduate; and Sober, dependable, family man. PW-2312, Engineering News-Record.

Contractors Engineer, 34, BSCE, P.E. La., 13 years experience with contractor and engineer on power plant construction. Prefer asociation with general contractor or allied organization—south or southwest. Available September 1. PW-2300, Engineering News-Record.

Construction Supt. and Reg. Engineer desires sewer work. Both have extensive heavy construction experience. Will assume responsibility for engineering, layout, and field supervision for salaries plus % of profit. P. O. Box 6336, Columbus, Ohio.

Equipment Maintenance superintendent. For heavy construction co. Top level manager thoroughly experienced in repair and preventive maintenance. Age 36, foreign or domestic. PW-2344, Engineering News-Record.

Construction Executive, 40, graduate Engineer, head of smaller construction company for 10 years doing public work, buildings, water and sewage facilities, and general construction. Available for responsible position. PW-2382, Engineering News-Record.

Civil Engineer, 31, married, Canadian, 5 years experience with consultant in storm and sanitary sewerage, bridges, desires relocation to southern states. Resume on request. Available 4 to 6 weeks. All replies acknowledged. PW-2354, Engineering News-Record.

Sewer and Tunnel Supt. specialized in deep, bad sewers, wellpointing, heavy shoring, rock, muck and concrete work. PW-2369, Engineering News-Record.

Civil Eng'r., P.E., 33, 12 yrs. wide exp. design, specs., estimates, contract administration-wide variety of civilian & military projects PW-2417, Engineering News-Record.

Civil Engineer, B.Sc(Eng.) 32, married. Seven years experience in planning, design and construction of hydroelectric and industrial projects. Desires position with consulting engineering firm or contractor as project engineer. Fluent French and Spanish. PW-2375, Engineering News-Record.

Civil, structural, P.E., 25 years design, estimating, inspection. Extensive experience highways, bridges, industrial plants, commercial bldgs, waterfront work, municipal, steel fabrication, erection. Prefer foreign work. PW-2416, Engineering News-Record.

Construction Engineer, 39, M.S.—Civil, available October, wide experience heavy construction, concrete "Expert', design and materials control experience. Location open. PW-2350, Engineering News-Record.

Civil Engineer, 35, BSCE-Registered Ohio. Prefer design, estimating & administrative work in contracting office. PW-2371, Engineering News-Record.

Construction Engineer: 33, Graduate Civil. Eight years experience as superintendent, engineer and estimator on all phases of chemical plant construction and maintenance. Desire position with contractor engineer or owner in Denver area. Will consider other areas. PW-2399, Engineering News-Record.

Struct. Engineer, capable, substantial experience, up to date in theory and practice in design of all types of bridges, heavy steel const. (plants, mills, hangars) primary education, languages, certain stress analyst, references, available September. PW-2380, Engineering News-Record.

Top Level Construction Superintendent. Fifteen years proven record of achievement in all types of heavy construction, estimating, engineering, supervision, etc. Seeks responsible position with sound, progressive construction firm. PW-2381, Engineering News-Record.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

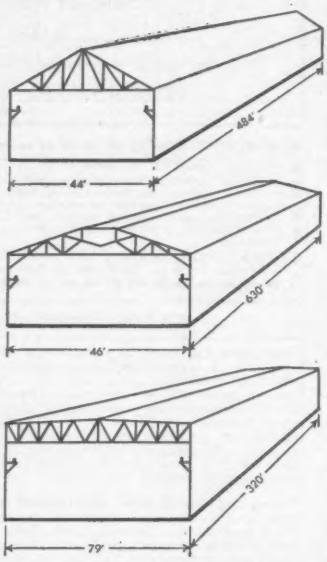
$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

Dismantling surplus facilities as a result of
Aluminum Company of America's
Modernization Program at Massena, N. Y.

21 Steel-Frame Heavy-Industrial BUILDINGS



IN EXCELLENT CONDITION
MUST BE SOLD AT ONCE
Various Sizes, Clear Spans,
Brick Curtain Walls.
All with Overhead Cranes
Easily Dismantled
Ideal for Re-erection

HEAVY ELECTRICAL EQUIPMENT
Including motors, generators, transformers, convertors, rectifiers, controls, etc.

Rotary ball-mill, cement mixer batch plant, foundry items, gas producer machines, crushers, blowers, scales, heavy carts, crane boxes, bucket and belt conveyors, hydropneumatic accumulator, etc.

Structural steel shapes, pipe, valves, grating, overhead doors, steel & wood silos and numerous other items.

For complete information, prices and inspection arrangements contact

CUYAHOGA WRECKING CO.

Sales and Field Office
P. O. BOX 384 MASSENA, N. Y. RO 4-0253

WANTED
16" Heavy Duty DREDGE
Give particulars.
ROBERT E. LEE & CO., INC.
Box 417, Manning, S. C.

WANTED
SUCTION DREDGE
Small, Portable Suction Dredge in Good condition.
P. O. Box 2172
San Francisco 26, California

• BUSINESS OPPORTUNITY

New Building Construction firm with Stran-Steel Franchise covering Central Florida (fastest growing area in Country) desires partner Registered C. E. approx. 40 yrs. with $20-25000 to invest. Unlimited opportunity. BO-2239, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

• WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

RAILS-TIES
TRACK ACCESSORIES

Rails, steel ties, splice and angle bars—whatever your needs, you are assured of rugged construction from quality steel when you specify "West Virginia." "One plant production" allows shipments in mixed carloads. For further information, contact Connors Steel Division, P. O. Box 316, Huntington, West Virginia.

CONNORS STEEL DIVISION
PORTER
H.K. PORTER COMPANY, INC.

"FASTER FROM FOSTER"

PIPE
1/8" to 48"
VALVES AND FITTINGS

RAIL
TOOLS • TRACK ACCESSORIES

STEEL PILING
STEEL-SHEET PILING • H-PILE • PIPE PILE

NEW YORK • CHICAGO • PITTSBURGH
HOUSTON • ATLANTA • LOS ANGELES

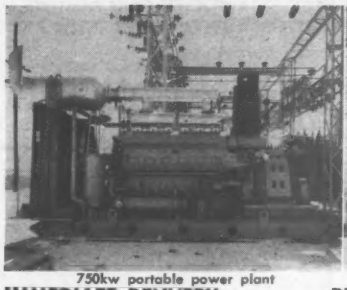
L. B. FOSTER CO.

RAILS
MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W. VA.

KEEP YOUR CAPITAL INVESTMENT DOWN!

DIESEL ENGINE GENERATOR SETS RENTED

300KW TO 1000KW CAPACITY



750kw portable power plant

300kw power plant on wheels

IMMEDIATE DELIVERY — READY TO OPERATE ON ARRIVAL

A. G. SCHOONMAKER Company, Inc.
Foot of Spring Street, Sausalito, California
EDgewater 2-1490
50 Church Street, New York 7, New York
Digby 9-4351

1—1½ YD. HAYWARD ORANGE PEEL BUCKET. 4-leaf Heavy, Standard type. Like new—unused. 8500# Cost new $6000.00. OUR PRICE....$2495.00

1—35 ft. Hallas Belt Conveyor—30" trough type. New—unused. Gas. powered. SPECIAL

EQUIPMENT CORPORATION OF AMERICA
Box 503 Clifton Heights, Pa.

Complete 16 ft. Diameter Tunnel Spread

Concrete forms, 4", 6", 8", 24" Spiral Welded Pipe, Locomotives, Muck Cars, Tunnel Agitators, Pumps, Pumpcrete machines, etc. For information and catalogue, write or phone

WESTERN CONTRACTORS SUPPLY CO.
4817 Lake St., Melrose Park, Ill.
CO. 1-8875 FI. 5-0690

PIPE
Surplus New & Used
FOR SALE, WANTED OR RENT

Call: HYACINTH 7-4900

PIPE, VALVES & FITTINGS
PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

—PIPE—

500,000 ft 10¾" O.D. 35#
200,000 ft 8⅝" O.D. 28½#
1,000,000 ft 12¾" O.D. 40#
20,000 ft 16" O.D. 42#
Machine cleaned, plain end No. 1 grade.

INDIANA-OHIO PIPE CO.
P.O. Box 5412, Shepard Sta. Phone C.L. 35527
Columbus 3, Ohio

ASSOCIATED PIPE & FITTING CO., INC.

PILING PIPE SHELLS MANDREL FITTINGS	"H" BEARING PILE SLEEVES AND SHOES	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

FOR SALE
New, Domestic, Prime

STEEL

50,000 lineal feet Beams 21-inch wide flange at 62# in 42 or 54 foot lengths.

3,000 lineal feet Beams 36-inch wide flange at 300# in 54 foot lengths.

14,000 lineal feet Pipe 33" OD X 0.500 wall thickness at 174#. F.O.B. Houston. Subject to prior sale.

Contact: BROWN & ROOT, INC.
Purchasing Agent, P.O. Box 3
Houston 1, Texas. Phone FA 3-7121

FOR SALE OR RENT

Erie Sprayer Trailer portable aggregate and cement batching plant, fully automatic; 3-compartment aggregate bins, 28 c.y. or 42-ton capacity; 3 c.y. batcher; 24" belt conveyor, single phase motors throughout; hot or cold water meter; 8:25 x 20 tires; silo capacity 175 bbls.; 9" vertical screw elevator, capacity 267 bbls. per hr. Plant capacity 60 c.y. per hr. 2 Recorders with interlock. Meets Corps of Engineer and Penna. State Highway specs. 5600 c.y. batched by plant.

2 Mixer Trucks—4½ yd. Blaw-Knox Mixers mounted on 1954 International Trucks.

Contact

H. I. LEWIS CONSTRUCTION CO., INC.
43 E. Main Street, Middletown, Pa.
Telephone WHitney 4-4654

FOR SALE

48B Bucyrus Erie Shovel, diesel 2½ c.y.
3540' 9" x 9" road forms
1800' 11" x 13" airport forms
2500' 16" x 12" airport forms

WILLIAMS CONSTRUCTION COMPANY
Box 5045 Balto. 20, Md. Murdock 6-1000

RANSOME DUAL DRUM PAVER

Model 34 E with Hercules HXE gasoline engine. in excellent condition—ready to work. $21,500

M-W EQUIPMENT CO.
Hunting Park Ave. & Fox St., Phila. 29, Pa.
BAldwin 6-2600

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

• DROP HAMMERS • DRIVING CAPS • HOISTS AND BOILERS
• STEEL LEADS • PILE DRIVER HOSE • STEEL SHEET PILING

CONMACO, INC.
Dlaxel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

NEW
CLEAVER BROOKS BOILER
Direct gas fired Cleaver Brooks Heater for heating heat transfer oils. Factory new.
Model PT 1807, 2,500,000 BTU, Includes electric motor and auxiliary circulating pump.
Price—$5200.00
DRAVO-DOYLE COMPANY
2601 Preble Avenue Pittsburgh 33, Pennsylvania

PILING

SURPLUS NEW and USED
For Sale, Wanted or Rent

We do a Nation-wide business in
STEEL SHEET PILING

IMMEDIATE SHIPMENT
815 pcs. 75 to 30 ft. Beth. SP-5a—New York
100 pcs. 52 ft. Beth. ZP-32—Connecticut
103 pcs. 60 ft. MZ-27—Tennessee
150 pcs. 60 ft. SP-4—W. Virginia
290 pcs. 60 to 30 ft. M-16 & M-115—Tennessee
370 pcs. 60 to 30 ft. M-115 & M-116—Indiana
150 pcs. 54-30 ft. M-1|5—Michigan
81 pcs. 25 ft. M-115—Mississippi
220 pcs. 15 ft. M-115—Missouri
Other lengths and sections at various locations. Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.

PILE DRIVING EQUIPMENT
VULCAN AND McKIERNAN-TERRY PILE HAMMERS & EXTRACTORS
All Sizes—For Rent & Sale—Immediate Shipment

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

---

800 Pcs. Larssen Piling in New Orleans

New & Used Larssen Section II 26 lb. per sq. ft. in 20 ft. & 25 ft., 30 ft. lengths. No 400 Vulcan Pile Extractor.

SEABOARD STEEL CORP.
P.O. Box 5071 Sarasota, Fla.
Tel Ringling 7-0461

H & SHEET STEEL PILING

3700 PCS. BETH. SP6A, 50' 56' & 48' & 40' & 35'
450 PCS. MP112—12', 25', 35', 40' & 60'
850 PCS. BETH.—AP3 20', 25', 30', 35' & 60'
790 PCS. BETH.—DP2—31' 35' 40' 50' 60'
1200 PCS. ZP38-ZP32—25' 30' 50' 60' & 65'
1300 PCS. BP10 BP12—BP14—55' to 60'
400 PCS. BETH. ZP22—25', 30', 35' & 40'

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
MONTREAL—BALTIMORE—JACKSONVILLE
CLEVELAND—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVE
12—Gen. Elec. 100, 80, 65, 45, 25 & 23 ton
25 Ton New Whitcomb Diesel Elec.

5 WHIRLEY CRANES
4—50 Ton Elec. 150' Boom 35' Gantry
2—50 Ton, 1—28 Ton 100' Boom, Steam

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone MU-2-3075 or MU-2-1898

Used Equipment

2—63TD Euclid Trucks
5—46TD Euclid Trucks
1—L85 Lorain Comb. Shovel, Dragline, Crane.

Buy or rent Air Compressors
60', 125', 210', 365', 600', 900' Air Tracs 4" & 4½" Drills
Subject to prior sale or disposition

L. B. SMITH, INC.
Syracuse, N. Y. GR 5-2196
Albany, N. Y. 5-7577
Buffalo, N. Y. KE 5250
Massena, N. Y. RO 9-3527
Call, write or wire TWX

FOR SALE

2—Manitowoc Model 3500 Liftcrane
1—Manitowoc Model 3900 Liftcrane
1—Lima Model 802 Dragline

MANITOWOC-FORSYTHE CORPORATION
37-11 Vernon Blvd.—*EXeter 2-6125*
Long Island City 1, New York

FOR SALE
4 CY LIMA SHOVEL
Model 1601—1957
Very Good Condition
FS-2259, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

FOR LEASE

New 50 Ton P and H Truck Crane Available for long term lease beginning September 1, 1959
Attractive Lease Can Be Made.
Cat. Traxcavators and other misc. Heavy Construction Equipment also available

CAPITAL RENTAL EQUIPMENT COMPANY
P. O. Box 4266—GL 2-2122
Austin, Texas

RENTAL and SALE of
PILE HAMMERS & ACCESSORIES

Steam, Gasoline and Diesel Cranes
Steam Generators—Compressors
Pile Extractors

Distributors for Vulcan Iron Works, Inc.

HOWARD W. READ CORP.
4603 N. 4th St., Phila., Pa.
Tel. GLadstone 7-0700

FOR SALE

1—Johnson Twin Silo Cement Handling Plant 373 Bbl. elevated silo, and 829 Bbl. ground storage silo, 6000 lb. cement batcher 7 c.f. Air Compressor and cement elevator. Located in Pawtucket, Rhode Island. Price as is, where is, $10,000.00. Purchased new in August 1957, used on one job only.

1—Erie cement handling plant 450 Bbl. w/elevator. Located at East Greenwich, Rhode Island. Price as is, where is, $5,000.00. Purchased new in May 1958, used on one job only.

Campanella & Cardi Construction Co.
780 Jefferson Blvd. Warwick, Rhode Island
RE 71300

ELEVATED WATER TANKS

Dismantled, moved and re-erected or all new units—erected anywhere. Advise capacity, tower height and location.
W. E. CALDWELL CO.
Box 41 Station E Louisville, Ky.
Melrose 7-2576

GET DIESEL FUEL ECONOMY

with low investment from used diesel tractors—White—Cummins diesel tractors for all purpose hauling. Also Mack tandem axle tractors. Trucks located in all areas.

Write or phone, R. W. Allen

MACK TRUCKS, INC.
PLAINFIELD, N. J.
Phone PL. 6-8600

FOR SALE
120 yd. Johnson semi-automatic concrete batch plant, five compartments (one cement); 35,000 sq. ft. Atlas (Irvington) steel speed forms for concrete walls; 1¼ yd. shovel front attachment for Bay City machine.
All eqt. used, in first class condition
P. O. Box 402, Barre, Vt.

---

100 ton
STIFFLEG DERRICK & HOIST
for sale—for rent
131 ft Boom.
Capacity, 30 ton 125 ft. rad.
mfg. by J. C. Theilacker engrs.

also—

Double drum hoist with boom swingers, 140 h. p. Diesel Eng.
Full information on request.

ARROW CONTRACTORS EQUIPMENT CO.
4646 S. Kedzie Ave., Chicago 32
FRontier 6-6500

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on following pages

NEW ENGLAND

Goodkind & O'Dea
Consulting Engineers
Design and Supervision
Foundations, Structures, Highways
1214 Dixwell Ave. Hamden, Conn.
616 Bloomfield Ave., Bloomfield, N. J.
325 Spring Street, New York 7, N. Y.
108 W. Lake Street, Chicago 1, Ill.

John Clarkeson
Consulting Engineer
Civil Engineers—Consulting Services
Highways, Airports, Bridges
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

Fay, Spofford & Thorndike, Inc.
Engineers
Airports, Bridges, Express Highways
Water Supply, Sewerage and Drainage
Port and Terminal Works
Industrial Bldgs.
Incinerators and Power Plants
Designs — Investigations
Supervision of Construction
Boston, Massachusetts

Jackson & Moreland, Inc.
Jackson & Moreland Int'l., Inc.
Engineers and Consultants
Electrical—Mechanical—Structural
Design and Supervision of Construction
-:- for -:-
Utility, Industrial and Atomic Projects
Surveys—Appraisals—Reports
Machine Design-Technical Publications
Boston — New York

Chas. T. Main, Inc.
Engineers
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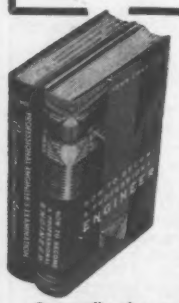

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The Arcair Co. 46
Armco Drainage & Metal Products, Inc. 80-81
Atlas Powder Co. 107
Avondale Marine Ways, Inc. 61

Barber-Greene Co. 6
Bethlehem Steel Co. 48-49

Cast Iron Pipe Research Association 54-55
The Commercial Shearing & Stamping Co. 53
Committee on Steel Pipe Research 72-73
Concrete Reinforcing Steel Institute 74

D-A Lubricant Company, Inc. 79
The Deming Co. 83
Detroit Diesel Engine Div., General Motors Corp. 109
Dewey & Almy Chemical Co. 112
R. E. Dietz Co. 12
Douglas Fir Plywood Association 36-37

Elgood Equipment Corp. 119
Esso Standard Oil Company 8
Euclid Div., General Motors Corp. 85

Fireman's Fund Insurance Company 94
Freyssinet Co., Inc. 41

Gardner-Denver Company 98-99
The Goodyear Tire and Rubber Co. 1
Grid Flat Slab Corp. 52
Griffin Wellpoint Corp. 29

Harnischfeger Corporation 30-31
Hercules Motors Corporation 131
A. C. Horn Div., Sun Chemical Corp. 34

The Ingalls Iron Works Co. 59
International Harvester Co. (motor trucks) 14-15
Iowa Manufacturing Co. 115
Irving Subway Grating Co., Inc. 70-71

Jenkins Bros. 16

Kaiser Aluminum & Chemical Sales Inc. 13
Kern Instruments Inc. 7
Keuffel & Esser Co. 47

Lawrence Paper Company 58
Lead Industries Assn. 35
LeTourneau-Westinghouse Co. 65-68
Lima Works, Construction Equip. Div., Baldwin-Lima-Hamilton Corp. 82, 92-93
Link-Belt Speeder Corp. 4
The Lufkin Rule Company 95

Macwhyte Company 89
The R. C. Mahon Company 42-43
Maintenance, Inc. 78
Massey-Ferguson Industrial Div. 103
Master Builders Co. ..... 3rd Cover
Mayo Tunnel & Mine Equipment 119
McGraw-Hill Book Co., Inc. 87
Moretrench Corporation 131

Neenah Foundry Company 57
Northwest Engineering Co. 3
Pittsburgh-Des Moines Steel Co. ..... 2nd Cover

Raymond International, Inc. 9
Reda Pump Company 119
John A. Roebling's Sons Corp. 45
Rollway Bearing Co., Inc. 77
Russell, Burdsall & Ward Bolt & Nut Co. 97

Sauerman Bros., Inc. 60
Servicised Products Corp. 40
Sika Chemical Corp. 84
Smith Engineering Works 18
Soragues & Henwood, Inc. 76
Stacor Equipment Co. 83
Symons Clamp & Mfg. Co. 2

Texaco Inc., Asphalt Sales Div. ..... 4th Cover
Thermoid Division, H. K. Porter Co., Inc. 114
Thew Shovel Co. 111
The Timken Roller Bearing Co. 105

Umeco Optical Division 75
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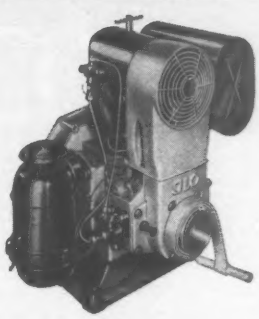

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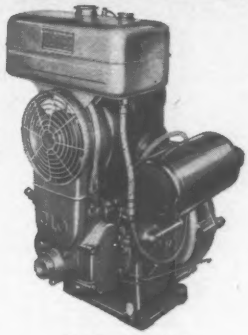

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Rail Rapid Transit

A STUDY OF RAIL RAPID TRANSIT PLANS in major North American cities is presented in this issue. It makes one point clear: We have not yet seen the last of rail rapid transit construction. Cleveland, Chicago and Toronto are among cities actively enlarging existing systems. San Francisco has a most exciting plan for an entirely new system where none now exists. And there are projects and plans involving such concepts of rail transport as the monorail and tracks on expressway rights-of-way.

These findings are all very encouraging for, as has been pointed out before on this page, highways alone cannot always move the people that need to be moved daily in and out of the great cities. Rail rapid transit, where it already exists, has its undeniable task in this movement of people. And it may well rate new application and expansion as metropolitan areas everywhere continue their population growth.

It is not a question of highways vs. rails. It simply must be highways plus rails where highways alone cannot do the future job of moving people in mass.

The Longest Span

A TRULY GREAT PROJECT was officially launched last week as ground was broken for bridging the Narrows, which forms the entrance to New York Harbor. For the New York-New Jersey port area it meant that a scheme first proposed in 1888 had outlived decades of heated controversy and would now be a reality. And for the construction industry, of course, the ceremony had special significance. It signaled the start of a project that, with its approaches, will cost $320 million. It gave notice that the whole reservoir of talents and specialized brainpower in the industry will be tapped at one time or another in the construction program. And it offered the challenge of building the longest span suspension bridge yet attempted (see p. 27 for its details).

In total, the ground-breaking ceremony heralded the opportunity for the construction industry to give the world another truly great structure.

A period of six years will be required to build this tremendous structure—more time than it took to create the whole St. Lawrence Seaway with its billion dollars worth of major locks, dams, power plants and bridges. But like the St. Lawrence, and indeed like other great bridges, the finished structure will be much more than a passing technical achievement. By providing a vital link in a highway system to bypass congested Manhattan, and by joining ferry-fed Staten Island firmly to the rest of the city for the first time, the Narrows Bridge will exert an economic influence of great magnitude. One result is sure to be a construction boom in the relatively rural area that Staten Island represents.

Just as with most great public works projects, the public debates over this bridge have consumed more years than were required for the engineering, or will be required for the construction. But with its location, approaches, ownership and financing all resolved, only its proposed name remains at issue. On this question, we hope, with due respect for Giovanni da Verrazano who explored New York Harbor in 1525, that the name Verrazano-Narrows Bridge won't be made the official title of what has been, and seems destined to be, simply the Narrows Bridge.

Why Not Utility Tunnels?

ONE OF THE MOST PERSISTENT GRIPES of laymen the world over concerns the continuous tearing up of streets to repair utility lines of all kinds. Why, they say, can't engineers design these facilities so as to avoid this expense and inconvenience? It is a fair question that should receive more considerate attention.

The public's attitude was well summed up recently by an editor in Bombay, India, who wrote, "Mysterious though the ways are of those who are allegedly there to look after the public's amenities and funds, one still feels that no amount of mystic reasoning can justify the total abandon with which roads are being dismantled with cold deliberateness—and at a tempo which seems to be accelerating toward some form of absolute dig-up." In this long but pungent sentence there is an indictment of engineering planning and procedure that many U.S. citizens would subscribe to in relation to conditions in their own cities.

In the Far North on some of our military installations, utilities are put underground in a concrete box tunnel called a utilidor. The basic purpose here, of course, is protection from the cold, the steam pipes keeping the water and sewage pipes from freezing. But with electrical conduit also being placed in the utilidor, all utilities are readily accessible for repair, and there is no digging down from above.

If utility tunnels are too expensive to consider for built-up cities, they could at least be installed in new subdivisions and in the large satellite towns that have been created in open fields during the past few years. None has been built, so far as we know.

Actually, too, they should not be entirely impracticable for piecemeal construction in established cities in areas of large urban redevelopment or where streets are extensively torn up for some other purpose. If separate tunnels are used for different utilities, expense would be greater, but advantages might even be superior.

Street openings are one of the most prominent blotches on the escutcheon of the city engineer and his utility colleagues. Why not avoid them in our cities of the future by some form of utility tunnel?